

# AUTOMOTIVE INDUSTRIES

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• THIRTY-SIXTH YEAR •

May 5, 1934

## GM-AFL Conference Adjourned

### Fisher Body Officials, Union Leaders Refuse to Comment

by Athel F. Denham

Detroit Editor, *Automotive Industries*

DETROIT—Conferences between Fisher Body and A. F. of L. union heads were adjourned Wednesday without official statement from either side. Dr. Wolman, however, indicated that the conferences had been called primarily to solve the Cleveland strike situation. Scene of activity now shifts to individual Fisher Body plants where further conferences will be held between management and union representatives. The Labor Board's official statement indicated that wage questions had been taken up at the meetings. Another matter discussed was decreased level of employment at Cleveland Fisher and St. Louis Fisher and Chevrolet plants.

If the Cleveland strike had continued another week or two *Automotive Industries* finds that not only Chevrolet, but also Pontiac, Oldsmobile and Buick assembly would have been materially affected as the plant produced parts for all of these cars. As to St. Louis *Automotive Industries* understands that all workers badges have been called in and the plants closed down. At present it still seems uncertain if or when the plant will be reopened.

The adjourned meeting was probably the most important labor conference yet held from the point of view of setting a precedent. With the Detroit area relatively quiet as far as labor disturbances were concerned, the A. F. of L. concentrated its activities on outlying assembly plants. The most important of the strikes called obviously was the one in Cleveland, where a total shut-down was effectuated by the calling out of key men and effective picketing. Other points followed.

The next move came in the form of a request from the Fisher employees "company union" in Cleveland for an injunction to prohibit A. F. of L. men from keeping its members from entering the plant for work. While issuance of this injunction was pending Cleveland strikers voted to return to work pending the outcome of negotiations before the Automobile Labor Board.

The A. F. of L. had requested such a

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### NLB "Principles" Stated in Report

#### Many Precepts Directly Contrary to President's Often Expressed Ideals

WASHINGTON—Where the National Labor Board stands on many of the controversial issues growing out of Section 7(a) is summarized in a statement of principles released in connection with the publication of the first volume of the Board's decisions.

Presumably intended to settle arguments, the principles appear more likely to start some new ones, despite Senator Wagner's description of the Board's work "as a sound contribution to the formulation of a national labor policy, evolved by practical men as solutions of disputes involving fundamental industrial prob-

lems. The decisions follow established lines, preserving and advancing the principles of industrial relations contained in the Recovery Law."

Looking over the principles which the

(Turn to page 543, please)

### White Motor Employees Get 10% Pay Increase

CLEVELAND—A voluntary 10 per cent wage increase has been given the 3,100 employes of the White Motor Co., according to an announcement by G. W. Smith, Jr., vice-president.

The increase, which became effective May 1, is the third general increase of 10 per cent given the employees of the organization since last August.

### Feature Articles in This Issue

Skillful Basic Design Simplifies Production of Airflow Bodies

How's the Dealer Code Working?

Close Scheduling Synchronizes Body and Chassis Assembly In New Dodge Truck Plant

Largest Aircraft Diesel Is Inverted V-12 With Predicted 1200 Hp. Output

# Prospects Brighten for Sales Increase; May Production Schedules Close to April

by Athel F. Denham,

Detroit Editor, *Automotive Industries*

DETROIT—Lowered retail sales volume the last half of April had its effect in reducing production to roughly 355,000 cars and trucks for the month. This compares with 189,000 in April last year, is approximately equal to April of 1930 and 1933 combined, and is about the same as April, 1931.

Some indication exists at present that sales levels will go no lower for the time being with a possibility that some increase may be expected around the middle or end of May. At any rate, production volume scheduled for May is not much below the April total. The estimate at present shows projected production cars and trucks, including Canada, of 345,000 as against 227,000 in May of last year and the best May since 1930, exceeding even May of 1931.

The industry is about equally divided with nine companies showing decreased schedules for May and 10 showing increases. Among the companies with higher schedules are Buick, Chrysler, DeSoto, Ford, General Motors Truck, Hupmobile and Nash.

Individual company reports follow:

Hupmobile April shipments exceeded any month since April, 1932, totaling 1,050. Unfilled orders exceed potential May schedules. Buick April production totaled roughly 9,000 cars, about equal to March. Series 40 production in May should materially boost output.

Chrysler 6 and Airflow output has been steadily mounting with April estimated at 7,500.

Shipments of 10,728 Plymouth cars for the week ending April 21, established a new high record for the Plymouth Motor Corporation. This is 60.5 per cent ahead of the same week of last year and 7 per cent higher than the previous record peak. Retail deliveries in the same week totaled 7,288 Plymouths, which is an increase of 96.7 per cent ahead of the same week of 1933.

Retail deliveries by Dodge dealers for the week ending April 21 totaled 5359 passenger cars and trucks, an increase of 94.6 per cent over the corresponding week for last year. Of the total, 2219 were Dodge passenger cars, 2144 Plymouths, and 996 Dodge commercial cars and trucks.

Shipments of Terraplanes and Hudsons are continuing to run far ahead of the past three years, with the week of April 21 breaking a four-year record. According to Chester G. Abbott, gen-

eral sales manager, it is necessary to go back to February, 1930, to find a week which surpassed the shipments for the seven-day period ending April 21.

Hudson and Terraplane shipments are now over 5000 cars ahead of shipments for all of 1933.

A total of 62,388 units were delivered by Chevrolet dealers during the first twenty days of April, according to W. E. Holler, general sales manager. Sales for the year through this period total 235,332 units as compared to 154,526 units in the same period of 1933, making the period 152 per cent of the corresponding period in 1933. Retail deliveries of commercial cars and trucks continue to gain; 16,224 trucks were delivered during the April period, which triples the 1933 figure of 5304 units for the same period. Sales in the commercial field have shown steady increases, and at the close of this April period reached a record figure of 73,619 units for 1934.

Reo shipments for April were more than three times those of April, 1933, and almost 50 per cent above March, 1934. Total shipments for the first four months of this year were two and a quarter times those of the same period a year ago, and equal to the total volume of shipments up to August 5, last year.

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Reo's shipments of passenger cars during the first three and a half months this year are running far ahead of the corresponding period last year. Total passenger car and truck shipments up to April 15 this year equalled the 1933 shipments up to June 1, and with the new Flying Cloud now in steady production and with increasing demand for speed wagons it is expected that total sales for 1934 will soon be passed by the 1933 figures. Total orders up to the middle of April exceeded the 1933 orders up to August 8.

The number of passenger cars and trucks delivered by Dodge dealers during the first 16 weeks of 1934 and of 1933,

Robert E. W. Harrison



Who has been named Chief of the Industrial Machinery Division of the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce, succeeding W. H. Rastall, who resigned to take an executive position with the NRA. Mr. Harrison is chairman of the Committee for Standardization of Tolerance and Allowances for the Cylindrical Parts and Limit Gauges, of the American Standards Association of New York; secretary of the executive committee of Machine Shop Practice Division of the American Society of Mechanical Engineers; vice-president of the Society of American Military Engineers, and a member of several committees engaged on national standardization projects.

shows the gain in 1934 deliveries to have been twice as great as the entire sales volume recorded for the January 1-April 14 period of a year ago. Whereas Dodge dealers' deliveries for the first 16 weeks of 1933 amounted to 24,124 vehicles, they reach a total of 60,608 vehicles in the corresponding period of 1934. The net gain is 151.2 per cent or 36,484 vehicles.

In the year-to-date total of 60,608 retail deliveries reported by Dodge dealers, 26,687 were of Dodge passenger cars, 11,626 of Dodge trucks, and 22,295 of Plymouths. The relatively highest percentage gain was achieved in retail deliveries of Dodge commercial cars and trucks, which rose from 1586 for the first 16 weeks of 1933 to 11,626 in the like period of 1934.

With shipments made from the factory April 25, export sales of Studebaker passenger cars and trucks for the year to date exceeded the total for the entire year of 1932, it has been announced by Arvid L. Frank, vice-president and general manager. Studebaker's export business to May 1 will represent 70 per cent of the total for 1933, it was said.

# Business Must Fight Calumnies Heaped Upon It, USCC Convention Leaders Say

by Don Blanchard  
Editor, *Automotive Industries*

WASHINGTON — Business definitely went off the defensive at the opening session of the annual meeting of the United States Chamber of Commerce. It served notice that it was about fed up with the calumnies that have been heaped on it and that it was ready to combat aggressively the criticisms of those who would saddle it with all the responsibility for the nation's troubles because a few have proven untrustworthy.

"Business has ideals which are quite as lofty as those that other groups set before themselves," Chamber president Harriman said. "However hedged about it may be with the realities of existence," he continued, "it is working toward fine ideals as earnestly, as consistently and as successfully as any others in our national life. Business cannot and must not be judged solely by the abuses which have crept into its practices any more than the merits of a civilization can be weighed by its jails and prisons. . . . American business by and large has behind it a century and a half of unparalleled achievement which individual misdeeds cannot obscure."

In a similar vein, Mr. Robertson, board chairman of Westinghouse, said: "Business has been charged with being solely responsible for all our troubles. . . . Whoever ran our world in the past does not need to bow his head in shame or to

apologize. I see no reason for turning over its management to the control of those who have no record of performance back of them. . . . After all, what is it that enables private business to keep on from year to year and from generation to generation? In fact, it is no unusual thing to find a business unit surviving several governments. A study of the basic quality of all enduring business will disclose that it is based on integrity."

In a luncheon talk, Charles F. Kettering, GM vice-president, endorsed economic planning but warned against rigidity. He urged that our efforts to solve our economic problems be approached with the open-mindedness and flexibility that characterizes true scientific research—that we avoid making our plans for the future so positive on the basis of what we know today, that we cannot revise them in the light of the experience we gain tomorrow.

Code price controls were discussed in an important paper by Robert H. Montgomery, nationally known accountant and formerly head of NRA's Planning and Research Divisions, presented at one of the Wednesday afternoon round-tables. He held that it was impossible to protect prices by any standard cost formula as was being attempted in many codes because there are so many unknown and unknowable factors. In his opinion, the only practical criterion is the "lowest



**She's a Union Delegate**

Miss Odell Corley, employed by a Toledo automotive parts plant and a trustee of Local No. 18,384, Automobile Workers of America, was selected as a representative of the union to appear before the National Automobile Labor Board in Detroit. She is the first woman union representative to appear before the board

reasonable cost" in an industry. Under this standard, an individual charged with unfair price competition under a code, would be called upon to demonstrate the reasonableness of his prices. Each individual case would be handled on its merits unhampered by any rigid formula which, Mr. Montgomery contended, could not produce the answer any way because of the multitudinous variables.

Reverting to Mr. Harriman's talk, he gave NRA a qualified endorsement. He expressed the opinion that code of fair competition in basic industries were a permanently necessary feature of our economy with federal agencies cooperating with business to carry out the major functions exercised by NRA and AAA. While expressing his abhorrence of production curtailment, he indicated that he felt that some cooperative control of output must be exercised in the future to prevent a return of destructive competition in the case of products for which the demand is relatively inelastic. In the case of regulation of retail businesses of an intrastate nature, he not only doubted its necessity but questioned its constitutionality.

On the whole, Mr. Harriman said business men believe that N.I.R.A. has done much good. They fear, however, that self-regulation of business with federal approval will lead to autocratic and bureaucratic government control and to the regimentation of business. They feel further, Mr. Harriman continued, that too many codes have been adopted, that codes have tried to regulate too minutely, that wage increases have increased costs faster than consuming power, that some sectional wage differentials have been inequitable, and competitive relations between industries have been upset in some instances.



## Handcraft in a Machine Age

Carl Hallsthamer, Swedish-American sculptor, at work on one of the figures which will be included in the GM exhibit at the Chicago exposition. The model is that of a farmer attempting to light an old-style acetylene headlight. It will be placed in front of the display illustrating the development of electric headlighting.

## Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

There was no interruption in the upward trend in general business last week. Despite the cool weather, retail sales held up well; and in most sections the movement of retail goods was considerably above that a year ago. Wholesale activity, however, declined. The heavy industries held up well, while car loadings increased contrary to the usual seasonal trend.

The Guaranty Trust Company's index for business activity for March stands at 73.8, as against 69.9 for the preceding month and 51.7 a year ago. The Company's index of wholesale commodity prices on April 15 was 54.7, as against 54.4 a month earlier and 35.8 a year earlier.

### Car Loadings Increase

Railway freight loadings during the week ended April 21 totaled 589,453 cars, which marks an increase of 10,616 cars above those during the preceding week, an increase of 92,941 cars above those a year ago, and an increase of 26,926 cars above those two years ago.

### Store Sales Grow 32%

Department store sales in the New York Federal Reserve district during March, according to the Federal Reserve Bank of New York, were 32 per cent above those during the corresponding period last year, marking the largest increase reported since 1920.

### Gas Powered Truck Code Hearing Set for May 10

WASHINGTON—A public hearing on the proposed code of fair competition for the gas-powered industrial truck industry will be held by NRA Deputy Administrator L. J. Martin on May 10 in the Carlton Room of the Carlton Hotel.

The code, sponsored by the Gas-Powered Industrial Truck Association, would follow the basic code as far as the wage, hour and labor provisions are concerned, and provides for the executive committee of the association to act as temporary code authority for 60 days after the effective date, during which period a permanent code authority would be chosen, consisting of five members.

### No Chrysler Employee On Charity Says Corp.

DETROIT—No Chrysler employee, or former employee, so far as is known, appeared on public relief rolls during the depression, according to an announcement by the company. The Chrysler Industrial Association, of which every official and employee is a member, informed the City Welfare Department of this city that the association was to be notified if

any Chrysler employee or former employee applied for aid. During the fall of 1933 about 2600 families were given full or partial relief by the organization.

During the past five years the association, through the mutual aid division, has paid out \$314,817 for relief.

### Ford of Canada Declares Dividend

Company to Pay 50¢ Per Share; Quarterly Sales Approximately \$7,000,000

EAST WINDSOR, ONT.—The Ford Motor Company of Canada, Ltd., will pay a dividend of 50 cents per share, payable on May 28, to shareholders of record May 8, it was announced by Wallace R. Campbell, president, at the annual meeting in East Windsor this week. There are issued and fully paid up 1,658,960 shares, composed of 1,588,960 Class A, or non-voting shares and 70,000 Class B, or voting shares. The dividend disbursement will amount to \$829,480.

Material improvement in domestic and overseas business of Ford Motor Company of Canada, Ltd., since Jan. 1, was reported by Mr. Campbell. Unit sales in the first quarter of 1934 totaled 12,500, which was greater than for the first six months of either 1932 or 1933, Mr. Campbell announced. Export shipments contributed largely to this total, he explained, these being greater than in any year since 1929. The aggregate dollar value of all sales and other income for the quarter amounted to approximately \$7,000,000 while the total disbursement for wages and salaries in the three months was in excess of \$1,500,000 to an average employment of 4500 persons, he stated.

### H. E. Sunbury Promoted

PHILADELPHIA—Herbert E. Sunbury, general superintendent of the Allbestos Corporation, has been elected vice-president. Mr. Sunbury is a graduate of Lowell Textile Institute, and for the past 15 years has been engaged in the asbestos industry, occupying various positions with the General Asbestos and Rubber Co., North Charleston; the Multibestos Company, Walpole, Mass., and has been connected with the Allbestos Corporation for the past three years.

### Acklin Promotes Two

TOLEDO—F. C. Greenhill, sales manager of the Acklin Stamping Co., has been promoted to vice-president of the company, and Alvin E. Seeman, auditor, has been named treasurer. The announcement was made this week by W. C. Acklin.

## Labor Board Policy Statement Clash with Principles Approved by Roosevelt

by L. W. Moffett

Washington Correspondent, Automotive Industries

**WASHINGTON**—Labor disputes are a source of increasing concern in Washington. While the principles laid down by the President for guidance of the National Automobile Labor Board had been hailed as a standard for handling controversies, they appear to be falling short of the mark. Organized labor is plainly restive. Industry is likewise concerned over the differences within the Administration as is shown by the attitude of labor members of the National Labor Board in insisting upon the "majority" rule to govern collective bargaining which runs counter to the White House principle for minority representation enunciated in the settlement of the recently threatened strike in the automobile industry.

This White House ruling is in line with that of the NRA as pronounced in the joint statement of General Johnson and NRA General Counsel Richberg when the Weirton Steel Co. strike situation was before the National Labor Board. While organized labor has held out for majority rule—that is, the right of elected representatives of the majority of workers to bargain for all employees—it is interesting to note that it took an opposite stand in the case of the Real Silk Co. of Indianapolis.

Through the American Federation of Full-Fashioned Hosiery Workers, organized labor appealed from the Board's decision which, under the terms of the election, supervised by the Board, permitted the representatives chosen to bargain for all the workers. The election was won by the Employees' Mutual Benefit Association, a so-called company

union. Subsequently the Hosiery Workers' Union demanded that the company bargain with it as well as with the company union on the ground that as a group, though a minority group, the hosiery workers had the right to bargain with the management.

The Board, consistent with its policy, though at odds with the administration and NRA policy, rejected the appeal. The appeal was, however, striking evidence of the inconsistency of organized labor itself. It placed itself on record against its own policy for majority rule. Or, perhaps, indicated its determination to have a voice in collective bargaining regardless of the outcome of an election. Free to condemn industry for refusing board decisions, organized labor itself did in this case precisely what it has criticized industry for doing.

The difference between the National Labor Board on the one hand and the White House and the NRA on the other regarding majority and minority representation was brought to full light when Milton Handler, general counsel for the Labor Board, at a press conference last Saturday, announced this sweeping ruling of the board:

"The representatives selected by a majority of the employees within a given plant or department are the sole collective bargaining agency for the plant or department."

Comparing this with President Roosevelt's principle laid down in the automobile settlement there is found a directly opposite declaration:

"If there be more than one group, each bargaining committee shall have total membership pro rata to the number of men each member represents," said the President.

The Handler pronouncement not only reflects the conflict in the White House-NRA and board policy, it goes further. While not officially acting as spokesman for Senator Wagner, chairman of the board, it is evi-

dent Mr. Handler was speaking for the original Wagner labor bill, so bitterly condemned by industrialists and many employees alike. Even with President Roosevelt's support there remains considerable doubt whether the revised Wagner bill will get consideration at the present session of Congress, its sponsors to the contrary notwithstanding. At no time is it thought legislation calling for abolition of the independent company union can be enacted.

The organized labor-company union controversy is being pushed to an early decision. This acceleration has developed as the result of the plan of General Johnson for more "self-government" in industry. The plan calls for the setting up by each industry of its own labor board to prevent and settle disputes. Seeking to take advantage of the proposal, the Labor Advisory Board of the NRA is understood to have taken the remarkable stand that it should pass upon all the members of the board, representing employer, employee, and the public and moreover that it would not permit a company union labor representative to serve with an organized labor representative. Being organized-labor dominated it is obvious what this would signify. Industry was quick to see this disturbing trend and has entered vigorous protest. One prominent steel executive, well known for his ability in handling labor relations, was in long conference last week with a representative of the NRA over the issue. It is said it was made known in unmistakable terms that the Advisory Labor Board plan will not be accepted under any circumstances.

## 1933 Brake Lining Sales 11% Higher Than In 1932

**NEW YORK**—Sales of brake linings and clutch facings were \$14,808,230.29 during 1933, according to figures compiled by the Brake Lining Manufacturers' Association. This represented an increase of 11.34 per cent over 1932 when the sales were \$13,300,000.

The increase is largely accounted for by the increase in automobile production last fall. Of the increase in sales, which amounted to \$1,500,000, almost \$1,250,000 was in sales to car and equipment manufacturers for their new models. The replacement field in brake linings and clutch facings experienced very little improvement in 1933 over 1932.

## Chicago Insurance Rate Drops, Motor Thefts Less

**CHICAGO**—Chicago automobile insurance rates will be reduced an average of 26 per cent effective May 1, according to an announcement issued by Edward Rickards, manager of the National Auto Underwriters' Association.

This action, taken as a consequence to the great reduction of automobile thefts, will mean a saving of approximately \$1,000,000 a year to Chicago motorists.

## Dobbin Stages Comeback



It took a strike closing down Cleveland's filling stations to do it, but here is indisputable evidence that the horse hasn't, after all, been replaced. This one appeared on a downtown street

## Strikes Failure Weakens MESA Hold

### Increased Tool and Die Activity Forecast by Requests for Quotations

DETROIT—As predicted in recent issues of *Automotive Industries* the tool and die strike called by the Mechanics Educational Society has apparently died a natural death. All of the important tool shops contacted indicate they have ample employment on their rolls at the present time and that included on the payrolls are a heavy percentage of former "strikers" in spite of the fact that no settlements, as such, have been arrived at.

Failure of M.E.S.A. officials to make the strike effective has weakened the position of that organization to such an extent that it appears unlikely that it can again become a major factor in labor questions in the automotive industry in the near future.

As a matter of fact M.E.S.A. has recently switched its organization efforts to lines outside of the industry, concentrating for instance, on gasoline filling stations and chain grocery store employees.

An interesting development in connection with this strike, not previously reported, is that previous to the calling of the general strike the M.E.S.A. bought two tool shops, the MacDonald and LaSalle Tool Companies. With the calling of the strike it was announced that these



### Chevrolet Display Dominates "Boul Mich"

The world's largest electric sign, 148 feet high, 158 feet wide, rising 286 feet above ground level

shops had "signed agreements with the M.E.S.A." and would not be effected by the strike. It would seem almost as if the society had been expecting to obtain extensive contracts for new tools and dies for these shops while others in the Detroit area were closed, and thereby increase revenue to the society.

Activity in the various tool and die shops is at present fairly low but requests for quotations on tools and dies for new models from automobile plants are being received at the present time and increased activity is indicated beginning within the next thirty days.

## NRA Extends Automobile Labor Board's Jurisdiction to Include Parts Industry

WASHINGTON—The Automobile Labor Board has been instructed to increase the scope of its jurisdiction to include all disputes arising between labor and employers in the automotive parts and equipment manufacturing industry. General Johnson issued the orders enlarging the powers of the "board of three" late this week. The Johnson order marks the first extension of the work of this board whose working principles, as laid down by the President, have been regarded as setting precedents that may be extended to industry generally.

In the order extending the powers and duties of the committee to pass upon questions of representation, discharge and discrimination within the automotive parts industry, General Johnson stipulated that in submitting questions to the board the interested parties must subscribe in full to the "principles of settlement" laid down for settlement of disputes in the automobile industry and that

the board would be governed by the same procedure and principles.

Inasmuch as the parts manufacturers have never subscribed to the "principles of settlement" the jurisdiction of the board can be extended to them only to the extent that the parts manufacturers accept these principles.

The principles of settlement referred to are those announced when the board was organized.

### Evans Products Co. Gets Missouri Pacific Order

DETROIT—Reports are current that Federal Judge Faris of St. Louis has authorized the trustees of the Missouri Pacific Railroad Co. to purchase and install 300 box cars and automobile loading equipment from the Evans Products Co.

It is understood the cost of the equipment will be about \$133,800.

## New Deal Inadequate, Says J. P. Warburg

Banker Advises Monetary Experiments Be Abandoned by Government in U.P. Talk

PHILADELPHIA—The beginnings of widespread public criticism of the New Deal were indicated by James P. Warburg, vice-chairman of the Bank of Manhattan Co., in an address delivered to the students of the Wharton School of the University of Pennsylvania.

Mr. Warburg said no amount of "statistical evidence of recovery and no amount of ballyhoo can hide the fact that the people want something more out of the New Deal than they have got so far." Continuing in a sharp criticism of the recovery program, Mr. Warburg urged immediate abandonment of monetary experiments and government regimentation of business.

"It has become evident within the last few weeks," the banker said, "that in the minds of most people recovery under the New Deal is neither adequate nor assured. Perhaps the clear evidence to this effect is to be found in the number of radical proposals that have been put forth recently in Congress."

The banker outlined three courses now open to the Administration:

1. Pursuit of the first course of inflation.

2. Further pursuit of the march toward an authoritarian state through government planning and regimentation.

3. A halt in both of the outlined procedures and an about-face in the direction of abandoning monetary experiments and the idea that government initiative should partially or wholly supplant private initiative.

## APEM Employment Passes 1929 Peak

**Increases Accounted for By Spreading Out of Work And Reduction In Hours**

DETROIT—Employment in the automotive parts and equipment industry as of the first of April passed the peak of 1929, according to compilations just completed by Automotive Parts and Equipment Manufacturers Association. The total of 180,822 average number of men employed during the month of March compares with a rough average of 128,000 averaged over the years of 1928, 1930 and 1932, and a peak of 172,900 in 1929.

Much of this increase in employment is due to a spreading of work and a reduction in number of hours weekly.

The relatively high figure for last June was due of course to the sharp upswing in production which took place last year after the bank holiday period, at which time parts producers were unable to increase their forces fast enough to meet with customer demands for materials.

## NLB Principles

(Continued from page 537)

Board apparently regards as proper under 7(a) some of them make it easy to understand why the Board has been a storm center since its inception and why its decisions on occasion have been ignored.

Some of the principles are briefed in the following:

Collective bargaining has been construed to mean the exertion of every reasonable effort to reach an agreement.

Election of representatives under an employee representation plan, does not constitute approval of the plan. The workers must vote on the plan itself.

It is unnecessary for a collective bargaining agency to disclose the names of those it represents, when it seeks to bargain collectively with the employer. The President in his automobile settlement held the reverse.

The Board states that the manner of conducting an election is entirely within the discretion of the employees, despite the fact that it has established the rules in elections it has conducted.

Interference may take various forms such as . . . initiation of company unions. . . .

Representatives selected by the majority of the employees within a given plant or department, are the sole collective bargaining agency for the plant or department, the President's automotive settlement notwithstanding.

Striking employees who have been proved guilty of violence in the course of a strike need not be reinstated.



### New Nash Managers

H. N. Bradford      L. F. Barrett  
Central-West      New York

### Fruehauf Trailer Co.

DETROIT—Fruehauf Trailer Co. showed an increase in net earnings for 1933. As of December 31, 1933, net earnings were \$48,236 against \$25,616 for 1932. Current assets for the same period totaled \$1,633,464 and included cash, \$150,792; accounts and notes receivable, \$1,171,395; due from employees, \$4,876; inventories, \$306,401. Total liabilities were \$493,842, including \$200,000 notes payable; accounts payable, \$177,176; customers' deposits, \$70,717; dividends payable, \$5,933; Federal taxes, \$15,802; accrued liabilities, \$24,214.

### Black & Decker

BALTIMORE—Black & Decker Manufacturing Co. has shown a progressive increase each of the six months since the beginning of this fiscal year, October 1, 1933. The net earnings for the six months after all deductions for depreciation, Federal taxes, interest and all reserves amounted to \$110,670.85.

Bank loans were reduced during the period from \$677,534.52 to \$564,750.52. As of May 15 bank loans will be further reduced to less than \$500,000. The improvement in sales has not been limited to any particular industry or locality, but has been general and widely distributed to all parts of the world.

### Eisemann Magneto Co.

NEW YORK—Eisemann Magneto Co. reports a net loss (before adjustments) for the year ended December 31, 1933, of \$131,532 against \$203,875 for 1932. Current assets as of December 31, 1933, totaling \$857,147, included cash, \$90,323; inventories, \$672,529, and accounts receivable, \$94,295. Total liabilities for the same period were \$41,280, and included accounts payable, \$38,348, and accruals, \$2,932.

### Dunlop Doubles Dividend

LONDON—Dunlop Rubber Co., Ltd., has declared a dividend of 8 per cent less tax on the common stock for 1933. The previous year the dividend was 4 per cent.

## GM-AFL Detroit Conference

(Continued from page 537)

conference with General Motors officials, and it is reported that the request was granted with the understanding that the union should come to the conference "with clean hands"—no strikes should be in progress at the time. This was in line with the request of the Labor Board some time ago to desist from strikes until the Board had a chance to consider issues involved.

Despite the fact that following the subsequent calling off of the Cleveland strike another strike was called at Kansas City, the conference got under way Monday. However, the Kansas City workers are not identified with the A. F. of L. and the latter organization has no major automotive strikes in progress at present except the Bowler Roller Bearing organization.

Both General Motors officials and A. F. of L. leaders have agreed not to issue statements with respect to the conference until after completion of the present negotiations.

Strike conditions are tranquil at Toledo with Electric Auto Lite Co., Bingham

Stamping & Tool Co. and Logan Gear Co. running practically at normal capacity. May Day developed no trouble although Auto-Lite released their workers about two hours before the usual time and the plant was deserted when pickets and onlookers came to see the disturbance at closing time.

At the reopening of the hearing on the injunction early this week, attorneys for the plaintiffs sought to show that the automobile workers union had no sanction for the strike and is proceeding against its own laws.

Union leaders here representing 23 groups affiliated with A. F. of L. have united to aid automobile strikers and veiled threats of a general strike have been made.

Willys-Overland has shut down for the week through inability to obtain some parts. David R. Wilson, president and receiver, said he believed rush of business and not strikes was responsible for the delay. Failure of shipments of bearings to arrive was one of the immediate causes. The plant employs 3,000 men.

## Motor Vehicle Exports Make Big Gain in Canada

WASHINGTON—Canadian exports of motor vehicles and parts during March, 1934, were valued at \$2,197,044 and exceeded shipments for any month during 1931, 1932 and 1933, according to the Automotive-Aeronautics Trade Division, U. S. Department of Commerce.

This valuation, it is pointed out, was 58 per cent over February, 1934, exports valued at \$1,389,174, and 165 per cent above March, 1933, when shipments were valued at \$823,812. Of these totals, automotive parts accounted for \$190,723 in March, 1934; \$119,181 in February, 1934, and \$90,156 in March, 1933.

The increase in Canadian automotive exports was almost entirely accounted for by the large gain in shipments of passenger cars which increased 83 per cent, or from 2,269 units in February to 4,161 in March.

## "One-Horse" Tractors Have Upturn in Sales

MILWAUKEE—The pronounced trend toward living in "subsistence homes" has resulted in a substantial demand for "one-horse" tractors, according to H. E. Welbourne, president of the Pioneer Mfg. Co., 1910 South Eighty-first Street, West Allis. The self-

propelled 2-wheel tractor units made by the concern are powered with 2-hp. engines and are equipped with two handles for steering, to which are attached control levers. It does the work of a horse on tracts too small to sustain an animal. The only obstacle to a heavy expansion in sales at this time is the limited financial means of many families desiring the machines, Mr. Welbourne added. Improvement in general conditions eventually are expected to relieve that situation, he believes.

## W. J. Lantz, C. H. Phelps Consolidate Interests

DAYTON—W. J. Lantz and C. H. Phelps have pooled their interests and formed the Lantz-Phelps Corporation. The new company will continue to manufacture automotive devices and service equipment. Mr. Lantz will head the new organization as president and general manager while Mr. Phelps, as vice-president, will devote his time to research engineering and development projects.

## Sheffield Names Johnson

DAYTON—The Sheffield Machine and Tool Company announce the appointment of Don F. Johnson and Company, Inc., as its representatives in the Buffalo district.

## Time Sales Gain 145% in Year

WASHINGTON—Preliminary estimates of the dollar volume of retail financing of new automobiles show an increase of 145 per cent for the month of March as compared with March, 1933, when business conditions were exceptionally disturbed on account of the bank holiday, and an increase of 82 per cent as compared with March, 1932, according to the Department of Commerce. As compared with February there was an increase of 44 per cent, or considerably more than the increase for this month during the preceding two years.

Comparison of March, 1934, with the same month of previous years and the percentage changes from February to March in previous years are shown below:

Comparisons of March, 1934, with same month of previous years.

March, 1934, was  
145 per cent higher than March, 1933  
82 per cent higher than March, 1932  
15 per cent lower than March, 1931  
39 per cent lower than March, 1930  
52 per cent lower than March, 1929

February-March change in previous years.

Percentage change from February.

March, 1934	.....	+44.0
March, 1933	.....	+3.8
March, 1932	.....	+7.7
March, 1931	.....	+36.6
March, 1930	.....	+32.9
March, 1929	.....	+44.1

## Exports and Imports for the Automotive Industry for March and Three Months Ended March, 1934-33

	March		1933		March		Three Months Ended March	
	Number	Value	Number	Value	Number	Value	Number	Value
Automobiles, parts and accessories.....		\$20,641,008		\$6,926,990		\$44,662,283		\$19,809,425
Motor trucks, buses and chassis (total).....	10,076	4,570,883	2,528	1,122,740	23,688	10,632,820	8,748	3,558,511
Under one ton.....	1,129	361,783	250	63,287	2,300	692,196	804	199,402
One and up to 1½ tons.....	7,584	3,032,353	1,956	721,401	18,645	7,462,911	7,065	2,502,411
Over 1½ tons to 2½ tons.....	1,125	864,885	274	236,966	2,200	1,777,809	685	551,514
Over 2½ tons.....	186	282,630	42	96,276	463	661,097	134	232,913
<b>PASSENGER CARS</b>								
Passenger cars and chassis.....	16,141	8,317,917	5,528	2,614,914	28,698	15,801,858	18,108	8,594,693
Low price range \$850 inclusive.....	15,171	7,240,990	5,175	2,195,593	26,401	13,172,235	16,828	7,072,762
Medium price range over \$850 to \$1,200.....	691	649,526	214	209,760	1,439	1,375,235	728	708,338
\$1,200 to \$2,000.....	157	255,900	76	109,671	452	726,796	372	572,837
Over \$2,000.....	60	154,340	31	88,687	169	446,068	85	211,781
<b>PARTS, etc.</b>								
Parts except engines and tires.....		4,731,579		1,659,289		10,770,005		3,650,051
Automobile unit assemblies.....		2,027,077		934,886		5,236,752		2,552,105
Automobile parts for replacement (n.e.s.).....		302,332		100,025		654,102		292,141
Automobile accessories (n.e.s.).....		241,037		51,896		504,312		190,278
Airplanes, seaplanes and other aircraft.....	21	304,896	30	543,123	67	937,392	126	1,638,510
Parts of airplanes, except engines and tires.....		198,762		194,822		711,051		403,874
<b>INTERNAL COMBUSTION ENGINES</b>								
Stationary and Portable:								
Diesel and semi-Diesel.....	3	3,858	3	12,566	34	76,568	4	18,006
Other stationary and portable:								
Not over 10 hp.....	353	24,121	99	7,023	881	65,046	582	37,119
Over 10 hp.....	111	50,094	69	28,175	231	170,970	145	64,040
Automobile engines for:								
Motor trucks and buses.....	199	19,718	257	29,371	532	67,578	440	67,257
Passenger cars.....	4,156	256,815	2,483	164,069	7,702	465,386	4,550	322,080
Aircraft.....	105	520,641	29	151,826	295	1,269,765	637	387,476
Accessories and parts (carburetors).....		125,341		88,651		308,626		231,931
<b>IMPORTS</b>								
Automobile and chassis (dutiable).....	36	12,594	25	5,562	112	49,260	96	48,404
Other vehicles and parts for them (dutiable).....		8,826		9,274		13,628		16,143

## Ad in Automotive Industries Wins Art Award



### for wear...

Grease, Greed, when two warring surfaces engage each other, is the like prevent and break opposing forces. The break in traveling stones and other holding machinery furnish an example. Based on replacement costs, it is usually the debris, and not the found lining, which causes the greatest losses. This is true not only with ordinary carbon steel but even with most alloy-steels and lenses.

It's a different story when Molybdenum is added. Under our formula it improves wear-resisting properties. Molybdenum lining is a better alternative to brittle metals—especially with an other combination of effects at a competitive

cost. Comparative service tests have shown Molybdenum gear iron outlasting the usual steel drum three times with no appreciable wear as yet. The slight hardness of Molybdenum to iron has made this application possible. It is the inherent strength toward withstand the enormous torsional load.

Evidence in another field shows one automotive manufacturer using Molybdenum in brake shoes with the addition of only 6.4% Molybdenum. And what in terms of one form of application is true of others—be they brake drums, cast steel sleeves

etc., for machine bearings or what not. Wear resistance is only one of the many desirable qualities of iron and steel which thousands of service tests have demonstrated to be associated with Molybdenum. Have you a problem of equipment upkeep involving wear, corrosion, vibration or shooting stresses, corrosive, magnetic or heat resistance? The modern Climax, Molybdenum in Detroit, with their distributorship, can be of assistance. Molybdenum, write for our report book, "Molybdenum," Climax Molybdenum Company, 205 Madison Avenue, New York.

CLIMAX Mo-lyb-den-um

One of two advertisements in a series placed in *Automotive Industries* by the Climax Molybdenum Co. (handled by N. W. Ayer & Son, Inc.), which won prizes at the Thirteenth Annual Exhibition of the Art Directors' Club now being held in New York.

## New Motor Displays Feature Chicago Fair

### Ford Erecting Building; GM and Chrysler Enlarge Exhibits at Exposition

CHICAGO—The automotive industry will be represented with some of the most unique and educational exhibits and largest buildings on the Fair grounds when the Century of Progress Exposition reopens this year. The Ford Motor Company structure will be the largest single display of the 1934 Fair; General Motors is constructing a gigantic Hall of Progress where automotive improvements introduced by GM over a quarter century will be displayed, and the Chrysler Building is being extensively renovated.

More than 2400 workmen are busy at the Fair grounds in preparation for the opening. The GM addition to last year's display involves an expenditure of \$1,000,000, bringing the total cost of this exhibit to approximately \$3,000,000. The Ford building, occupying an 11-acre site is being constructed of a new type all-weld steel frame and when complete will be 900 ft. long and 12 stories high. More than 9000 floodlights will be used for night-time illumination.

The largest mural photograph ever made will be shown in the Ford building. It will consist of 97 separate panels, requiring about four-fifths of a mile of paper, 40 in. wide to print. A new feature in conjunction with the Chrysler exhibit will be an out-door forge where certain automobile parts will be shaped. The Firestone Tire & Rubber Co. is making additions to their exhibit and the old Air Show is being converted into a wild animal feature for the Standard Oil Co.

## NRA Expected to Stay 90c Truck Fee; \$3 Levy OK

WASHINGTON—The proposal of the trucking code authority to collect 90 cents per vehicle for the registration and reporting of "not for hire" vehicles in all probability will be stayed, NRA indicated in a statement denying press reports that the proposed fee had been rejected.

In the meantime, it was pointed out, the proposed 90 cent fee was not to be used to defray any part of the expense of administration of the trucking code, but that it merely represented the actual cost of registering and compiling data on "not for hire" vehicles which the code requires the code authority to gather. The \$3 assessment on trucks "for hire," it was stated, is to produce the funds necessary for the code authority operations.

## U. S. Made Cars, Trucks Lead in Swedish Sales

WASHINGTON—American-made passenger cars and trucks led the automotive sales in Sweden for the first quarter of the current year, according to the Department of Commerce.

During January and February 598 new passenger cars were registered in Sweden, of which 443 units were of American

manufacture. Truck sales kept pace with passenger car units. Of 544 new trucks registered during the first two months of the year 295 were American made. There has been a notable improvement in the automotive market in Sweden for the January-March period of the current year, figures show sales to be approximately 50 per cent greater than for the corresponding period of 1933.

## GM Annual Meeting

WILMINGTON, DEL.—At the annual meeting of the stockholders of General Motors Corporation held here this week, the directors were reelected for the ensuing year.

## Austria Curtails Automobile Imports

WASHINGTON—The annual quota of automobiles which may be imported into Austria has been reduced from 120 units to 80 units per country by decree of the Austrian Government, according to advice received at the Department of Commerce.

This decree became effective about 10 days ago. An additional quota up to 20 units per country is provided for in the decree against compensatory exports of Austrian steel of a six-fold value of the imported automobiles.

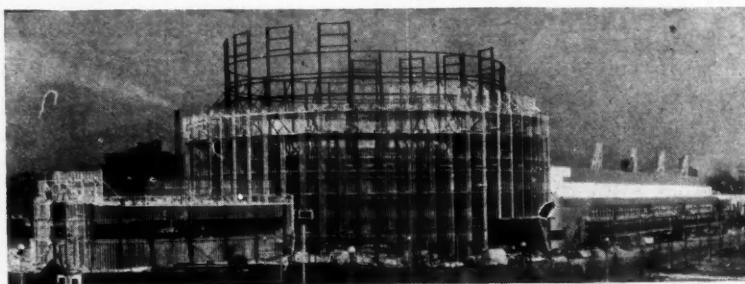
## Acheson Oildag Co. Now Acheson Colloid Corp.

PORT HURON—The Acheson Oildag Company announces this week the change of the firm name to Acheson Colloids Corporation.

No change in personnel or location of the business is contemplated in the change of name. It is explained increasing business and necessary expansion along several lines of work makes the change imperative.

## Report Ford Dock Sold

DULUTH—The M. A. Hanna Coal Co., subsidiary of the M. A. Hanna Co., has purchased the Ford Motor Co. coal dock here according to reports. The dock handles a 10,000-ton cargo in 20 hours. It is further reported the transaction involved nearly \$1,000,000.



## Largest Single Building at Chicago Fair

Framework of the Ford Motor Co. building at the Century of Progress grounds where a dramatized story of transportation from its earliest beginnings will be shown

## Automotive Retailers Plan Effective Code Enforcement Measure at St. Louis Meeting

ST. LOUIS—Automobile dealers like their code, but they think that something should be done about getting better enforcement.

At the meeting of the Emergency National Committee of the Automotive Retail Trade held here April 30 and May 1, it was decided, upon recommendation of F. W. A. Vesper, chairman of the National Control Committee, that state advisory boards throughout the United States shall proceed immediately to exercise their authority in obtaining compliance backed by the power to impose penalties, amounting to "costs" of code administration, upon confessed violators.

Under the plan recommended, a violator may be summoned before a state advisory committee, or before a local executive committee, to which authority has been delegated, to plead to or present a defense against specific allegations, and, upon the judgment of the committee, to submit to the restitutive imposition of "costs." The procedure outlined for such "trials" is based on voluntary submission on the part of violators to the ruling of the hearing body. A distinction is drawn between "adjustments" so made and "enforcement" which must be accomplished through the U. S. District Court, or the Federal Trade Commission.

The delegates, when they left the meeting, felt that there had been placed in the hands of the code administration force an effective means for obtaining code compliance.

Keith Carlin, assistant counsel of NRA, in discussing enforcement, emphasized the fact that NRA itself, as well as the code authority of the industry, is an adjustment rather than an enforcement agency. He recommended the exercising of reasonable judgment in the adjustment of all cases and, failing in that, the prompt submission of complaints against wilful violators to Washington for aggres-

sive "enforcement" steps. Mr. Carlin particularly stressed the fact that all efforts were being directed in Washington toward obtaining prompt action and equally prompt conviction on code violations submitted.

The meeting registered strong disapproval of a recent NRA ruling on consignment which was to the effect that it was not a violation of the dealer code to take in on consignment a motor vehicle and sell it for the owner at a price higher than that published in the Official N.A.D.A. Guide. In registering a "vigorous protest" against this ruling, the Emergency National Committee asked that it be rescinded for the reason that it encouraged "chiseling" and violation of the code. In its stead the committee suggested a provision that no dealer may accept a used car in any way so as to net the owner more than the price in the used car guide.

Aaron DeRoy, Detroit Hudson-Terraplane dealer, and Herman Wangelin, Illi-

inois Ford dealer, were appointed members of the National Control Committee to take the places of A. G. Southworth and William Brace, who resigned.

The following Administrative Committee was set up: Chairman, F. W. A. Vesper, St. Louis; John E. Smith, Atlanta, Ga. (Chevrolet); J. D. Sellers, Jackson, Miss. (Olds); C. W. Ide, Los Angeles, Calif. (Used); George McFarland, Harrisburg, Pa. (Reo); J. Weiss, New York City (Used); Grant McFayden, Omaha, Neb. (Ford); W. D. Regan, Chicago, Ill. (Chrysler-Plymouth); W. J. Brace, Kansas City, Mo. (Hudson); Arthur A. Nelson, Hartford, Conn. (Chevrolet); R. E. Chamberlain, Buffalo, N. Y. (Packard); A. G. Southworth, New York City (Buick-Pontiac); C. J. Myers, Oklahoma City, Okla. (Dodge); L. D. Frint, Milwaukee, Wis. (Nash); S. H. Blair, Salt Lake City, Utah (Graham); J. R. Weir, Louisville, Ky. (Chrysler - Plymouth); Liston Zander, San Antonio, Tex. (Used).

## Report Marmon Receiver Gives Option on Company

INDIANAPOLIS—A. D. Sterner, representing the newly organized American Automotive Corporation formed for the purpose of buying up the defunct Marmon company, says he has obtained from the Marmon receiver an option to buy certain plants, equipment, inventory and right to trade names under this plan. The new concern is described in a prospectus as a Delaware corporation with the rights to build Marmon 16-cylinder automobiles. The prospect pointed out race cars also may be manufactured. The appointment of Harry A. Miller, formerly of Los Angeles, as engineer substantiates this possibility.

Other than the name of Miller as engineer and Sterner as the corporation representative, no mention is made in the prospectus of the possible personnel of the new company.

## First Quarter's Statements

	1934	1933
Vehicle Companies		
3 companies previously reported.....	-\$2,099,274	-\$1,795,985
Yellow Truck & Coach.....	+ 7,315	- 1,067,981
Hupp Motor Co.....	- 742,526	- 522,997
Studebaker & Rockne Corps. (excluding White Motors).....	- 329,633	- 2,046,598
Pierce-Arrow Co.....	- 308,544	- 259,505
Hudson Motor Car Co.....	- 802,845	- 1,491,005
Total—8 companies.....	-\$4,275,507	-\$7,184,071
Other Automotive Companies		
17 companies previously reported.....	+\$2,654,633	-\$5,042,931
Clark Equipment Co.....	+ 118,500	- 136,569
Evans Products Co.....	+ 504,280	- 32,912
Moto Meter.....	+ 190,839	- 58,518
Kelsey-Hayes.....	+ 127,303	- 363,363
L. A. Young Corp.....	+ 311,883	+ 8,444
Parker Rust-Proof Co.....	+ 280,816	+ 64,796
Wickwire Spencer.....	- 83,452	- 300,954
Curtis Wright Corp.....	- 204,977	+ 4,753
Wright Aero.....	- 75,109	- 105,384
Link Belt Co.....	+ 118,077	- 205,671
Westinghouse.....	- 1,776,152	- 3,491,572
Total—28 companies.....	+\$2,166,641	-\$8,659,881

## Automotive Demands Tax Steel Capacity

Production Pressure May Create "Neck-of-Bottle" Condition In Industry

NEW YORK—Barring unforeseen developments, that part of the steel industry's finished capacity devoted to the production of automobile sheets and similar specialties will be taxed to the utmost over the next two months. Automotive consumers are well aware that neck-of-the-bottle conditions in the supply are likely to make themselves felt in the case of the more highly finished descriptions of steel while pressure, when it comes to ordinary flat steels, will be relatively less marked.

The American Iron & Steel Institute places the current week's rate of operations at 55.7 per cent of theoretical ingot capacity. This figure is interesting chiefly because it permits comparison with the industry's estimate of last year's peak of activity which it places at approximately 59 per cent of capacity. Mahoning and Shenango valley operations are reported at 63 per cent of capacity and in the Chicago district mills are employing 61 per cent of capacity. The rate for finishing mills is higher. Approximately two-thirds of the entire strip mill capacity is in operation, with shipments of hot rolled somewhat ahead of those of cold rolled material.

The movement of body and fender stock to consumers is growing broader from day to day, it being sensed that, while the bulk of specifications is to cover current requirements, some stocking has already gotten under way. Shipments of wire and of bolts and nuts into automotive consumption have also increased. Automotive alloy steels, especially chromium and chromium-nickel steels, are also passing into consumers' hands in heavier tonnages. With the period during which mills booked orders at lower prices now definitely ended, there is no incentive to place additional orders at this time, and little in the way of fresh commitments is looked for until June.

**Pig Iron**—Nearby requirements of automotive foundries were covered for the most part before the recent advance. Since then only a few odd lots for filling in are reported to have been bought.

**Aluminum**—The best grade of No. 12 alloy, remelted, is now quoted at 16c. The market for remelted metal generally is steady, with that for virgin metal firm.

**Copper**—"Blue Eagle" copper prices are now promulgated daily by the copper Code Authority, being issued in the form of an average base price for electrolytic, delivered Connecticut Valley. This quotation was 8½c. at the week's opening. "Outside" copper is offered by custom smelters at ¼c. less per pound. Whether the use of such cheaper copper is prejudicial to the purchaser when it comes to Government contracts, is a moot point on which consumers are pressing for a ruling by the NRA authorities.

## Leading Cities Make Big Car Sales Gains

	March, 1934	March, 1933	Three Months	
			1934	1933
Baltimore	1,079	451	2,094	1,717
Buffalo	1,606	865	2,940	2,276
Chicago	4,940	3,031	9,736	8,464
Cincinnati	1,178	637	2,544	1,898
Cleveland	2,505	863	5,040	2,878
Dallas	966	345	1,966	993
Detroit	7,144	1,657	14,681	6,077
Indianapolis	1,031	486	1,979	1,624
Kansas City	994	929	1,830	2,240
Los Angeles	4,349	2,453	9,577	7,547
Milwaukee	1,366	467	2,346	1,192
Philadelphia	2,012	1,430	3,874	3,471
Pittsburgh	1,841	949	3,576	2,332
Rochester, N.Y.	897	492	1,618	1,210
St. Louis	2,423	1,234	3,893	2,867
Syracuse	614	295	987	702
Toledo	756	219	1,421	654

## McElroy Appointed Sales Representative

NEW YORK—Earle W. Webb, president of the Ethyl Gasoline Corp., announces the appointment of Paul McElroy, formerly with Batten, Barton, Durstine & Osborn, Inc., as sales representative of Ethyl.

Mr. McElroy, with headquarters in New York, will contact Ethyl licensees and automobile manufacturers throughout the United States.

## Studebaker In Production With New "Cruiser" Model

SOUTH BEND—Quantity production of the new "land cruiser" model Studebaker automobile has been started, according to Paul G. Hoffman, Studebaker Sales Corp. president. The new model is available in both the President and Commander chassis.

## Glass Would Lend Industries Money

Measure Appropriating Federal Reserve "Gold Profit" Is Inadequate

WASHINGTON—Whatever attitude may be taken regarding the Glass amendment to the Federal Reserve Act, appropriating government capital for the financing of private industry, one significant fact should be pointed out. If the government is going into the money lending business then it should be on a wholly adequate scale.

The Senate Banking and Currency Committee has approved the amendment which would further extend the Federal Reserve facilities to private industries during the present credit crisis. The funds would be made available out of the "gold profits" of the twelve Reserve Banks and will aggregate about \$278,000,000. This sum is altogether too small to accomplish the sponsor's objective.

Already two major industries have announced plans for the expenditure of \$200,000,000; A.P.E.M. is prepared to spend \$1,000,000 in improvements and equipment, and the textile industry plans expenditures of a similar amount. These plans are contingent upon Congress not putting obstacles in the way of these industries raising the necessary capital.

Governor Eugene Black of the Federal Reserve is in accord with the Glass idea, but disagrees with the amount which should be appropriated. Mr. Black has made a survey of the nation's need in this respect and recommends provisions be made for advancing private enterprise nearly three times as much, or \$622,000,000.

## Chrysler Corp. Male Choir On the Air



This unique choral group, composed of 185 workers from the assembly lines, machine shops, loading docks, etc., of the Plymouth, DeSoto, Dodge and Chrysler factories, was heard in public concert this week. The choir, under the direction of Tom Lewis, was organized less than 18 months ago. Part of the program was broadcast in a national—international hook-up.

## Governors Sign NRA Pact Regulating Prison Labor

WASHINGTON—The nation's prisons have gone NRA. No longer may convict labor, labor and undersell free private enterprise. Now they are codified, and 28 governors are signatories to the pact.

Under the terms of the compact announced by General Johnson, hours of work per week in prisons shall not exceed 40; the compact further provides that prison-made products shall not be sold at prices lower than the fair current prices prevailing in the market in which a given product is customarily sold. Where contracts for the labor of prisoners are made, they must insure a return from the contractor of an amount equal in value to the cost per unit of product for labor and overhead necessarily paid in competing domestic industry on the comparable product.

## SAE Summer Meeting Program Announced

NEW YORK—Eighteen technical and general business sessions make up the tentative program of the S.A.E. summer meeting, which opens Sunday, June 17, and continues to Friday, June 22, at Saranac Inn, Upper Saranac, N. Y.

The schedule of meetings follows:

Sunday—Business Session, General Session.

Monday—Passenger Cars, sound problems; Transportation, accident prevention; Water Carnival; Trucks, Bus and Railcars, light trucks.

Tuesday—Maintenance Costs; Truck, Bus and Railcars, latest in railcars; Field Day; Passenger Cars, streamlining.

Wednesday—Diesel, design and development; Passenger Car Bodies, basic principles of design; Fuels and Lubricants, latest on bearing lubrication; Fuels and Lubricants, Diesel and aircraft fuels.

Thursday—Passenger Cars, engines; Aircraft, controllable pitch propellers; Aircraft Engines, fuels and combustion; General Session, Lowell Thomas, speaker.

Friday—Aircraft, towing basin contribution to research; Aircraft Engine, meeting extreme operating conditions.

## James T. Wilson Elected

KENOSHA, WIS.—James T. Wilson, vice-president of the Nash Motors Co., has been elected president of the Kenosha Manufacturers Association to fill a vacancy.

## Medium-Price Cars Staging Come-Back

NEW YORK—Even more encouraging than the story that total production figures tell is the picture obtained from an analysis of output by price classes. This picture reveals that swing to the low-priced field has been halted, at least temporarily, and that the public is beginning to expand its purchases of medium-price cars. The reversal of the trend not only indicates that the increase in the industry's dollar volume is greater than the gain in units, but also that the improvement is more broadly distributed than was the case last year.

As the accompanying table shows the output of cars wholesaling for \$501 to

\$750 increased 210 per cent in the first quarter over last year, while the \$751 to \$1,000 group gained 155.5 per cent. As a result of these increases, these two groups combined accounted for 28.6 per cent of production in the first three months as contrasted with only 18.6 per cent in the similar 1933 period. Production of cars wholesaling under \$500 declined from 77.6 per cent of total to 69.3 per cent, but the number of units produced gained 74.9 per cent, which is no mean increase despite the very much larger improvement in the next two higher price groups.

In the truck field, all capacity classifications show important improvements with the 2-3 ton group leading with a gain of 236 per cent.

## Passenger Car Production by Wholesale Price Classes

(U. S. and Canada)

Three Months 1933 and 1934 Compared

	1934	1933	Per Cent Change	Per Cent of Total 1934	Per Cent of Total 1933
\$500 and under.....	421,812	241,597	+ 74.9	69.3	77.6
\$501-\$750.....	151,020	48,700	+ 210.0	24.8	15.7
\$751-\$1,000.....	23,336	9,136	+ 155.5	3.8	2.9
\$1,001-\$1,500.....	7,177	6,554	+ 9.4	1.2	2.1
\$1,501-\$2,000.....	3,034	2,897	+ 4.9	0.5	0.9
\$2,001-\$3,000.....	1,989	2,238	- 11.0	0.3	0.7
\$3,001 and over.....	735	454	+ 62.0	0.1	0.1
Totals.....	609,103	311,576	+ 95.3	100.0	100.0

## Truck Production by Capacities

(U. S. and Canada)

	1934	1933	Per Cent Change	Per Cent of Total 1934	Per Cent of Total 1933
1½ tons and less.....	142,564	53,420	+ 163.0	93.2	94.2
2-3 tons.....	8,770	2,614	+ 236.0	5.7	4.6
3½ tons and over.....	1,279	435	+ 194.0	0.8	0.8
Special and buses.....	394	220	+ 79.0	0.3	0.4
Total.....	153,007	56,689	+ 170.0	100.0	100.0

## CALENDAR OF COMING EVENTS

### SHOWS

Chicago National Boat and Sport Show, Chicago .....	May 6-13
American Transit Assoc., Cleveland, Ohio .....	Sept. 22-27
Cleveland (Automotive Service Industries) .....	Nov. 19-23

### ANNUAL MEETINGS

National Battery Mfrs. Assoc., Cleveland, O. ....	May 16-18
Natl. Automobile Chamber of Commerce, New York, N. Y. ....	June 7
American Electro Platers Soc., Detroit .....	June 11-14
Natl. Assoc. of Motor Bus Operators, Cleveland .....	Sept. 21-22
Natl. Safety Council, Cleveland, O., Oct. 1-5	

### MEETINGS

American Petroleum Institute, Pittsburgh .....	May 22-24
National Street and Highway Safety Conference, Washington D. C. ....	May 23-25
S.A.E. Summer Meeting, Saranac Lake, N. Y. ....	June 17-22
American Society for Testing Materials, Atlantic City, N. J. ....	June 25-29
American Chemical Society, Cleveland, Ohio .....	Sept. 10-14
American Welding Society, New York City .....	Oct. 1-5

### CONVENTIONS

National Machine Tool Builders Assoc., Chicago .....	May 24-25
American Society for Metals, New York City .....	Oct. 1-5
American Transit Assoc., Cleveland .....	
International Foundry Congress, Philadelphia .....	Sept. 24-27
American Foundrymen's Assoc., Philadelphia .....	Oct. 22-26
National Foreign Trade Council, New York .....	Oct. 31-Nov. 2

### EXPOSITION

Natl. Exposition of Power & Mechanical Engineering (Biennial), New York, N. Y. ....	Dec. 3-8
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## American Opinion Divided on Probable Results of Proposed Rubber Control Plan

NEW YORK—American opinion is divided regarding probable results of the proposed agreement of rubber producing nations to limit the production of rubber. All agree that success of the plan would open the way for alarming increases in price, but some feel that operation of economic laws or the intelligence of supervision given by the foreign governments involved may prevent uncontrolled skyrocketing. The position finally accorded to American representatives in the cartel set-up—whether that of observers or of participants in decisions—also would have a bearing on developments.

That American manufacturers, both of rubber goods and automobiles, have much to lose and little to gain from the success of the proposed agreement, however, is rather generally agreed. Hope of a steady price structure appears to be the only possible advantage. Chances of large price increases, on the other hand, seem good. Should the agreement be signed by Great Britain, India, France, Holland and Siam, as proposed, there would be little to stop immediate price increases because the participants were responsible for well over 90 per cent of the rubber produced last year, which totaled nearly 850,000 tons.

Current production outside of the signatory countries, in fact, is said to run only about 12,000 tons a year and to

come from areas whose total potential output probably could not exceed 50,000 tons a year by any great margin.

The United States now consumes about 50 per cent of all the rubber produced and naturally looks askance at the proposed program which comes on top of rubber prices already considerably higher than they were a year and two years ago. Figured on a basis of *gold value* the average price of rubber in 1932 was 3.4c. per lb.; in 1933, 4.5c. per lb.; and now stands at about 8.4c. per lb.

While full information is lacking at this time, there seems to be a good chance that the process of limiting production may be put into effect on June 1, even if Great Britain and Holland are the only two countries officially to have agreed by that time. The other proposed signatories, it is said, are agreeable to this procedure even though the actual signing of the agreement by all concerned be delayed to a later date.

In the proposed agreement the control board is not obligated to release more rubber when the prices get high. Failure of the agreement to contain some such obligatory provision is one of the most unfavorable phases of the entire plan in the view of certain American observers. Lack of a provision fixing prices, on the other hand, is regarded favorably in New York.

## NRA Code Assessment Basis Recommended

WASHINGTON—NRA Code Authorities have received from General Johnson instructions and suggestions for the preparation of budgets and the determination of bases on which contributions toward the expense of code administration will be collected.

General Johnson suggests that code authorities take the following items into consideration in preparing their budgets and assessment plans: salaries, office expenses, traveling expenses, incidental charges including legal fees, etc.

The following method of levying assessments is recommended: sales basis of assessments, dollar volume sales, production basis, general plant basis.

## Injunction Act Invoked By Weirton as Defense

WILMINGTON, DEL.—The Weirton Steel Co., through its counsel, Caleb S. Layton, invoked the Norris-LaGuardia Act as its defense in the government suit now being tried before Federal Judge John Nields to force the company to submit to a poll of company employees on the question of what type of union is desired by the workers.

Heretofore the Norris-LaGuardia Act has been held solely a labor anti-safeguard measure in industrial relations. Mr. Layton asserted that even if it were construed that the National Recovery Act had impliedly repealed the limitations of the Norris Act upon the power of the Federal courts to grant summary relief, the public policy set in it of requiring the hearing of witnesses in open court still remains binding.

## Hudson Motor Car Co.

DETROIT—Hudson Motor Car Co. cut its 1933 net loss approximately 50 per cent over the 1932 loss. The net loss reported for 1933 is \$4,409,929 against \$8,459,982 for the previous year.

Current assets of \$7,532,956 as of December 31, 1933, included cash, \$2,334,832; U. S. government securities, \$344,607; accounts receivable, \$361,129; inventories, \$4,492,388. Liabilities of \$4,461,454 for the same date were: bank loan, \$1,000,000; accounts payable, \$2,952,200; accrued accounts, \$509,253.

## Goodyear To Pay Dividend

AKRON—Directors of the Goodyear Tire and Rubber Co. have voted a dividend of \$1 per share to stockholders of record at close of business June 1. The dividend is upon the First Preferred Stock of the company and will be paid July 2.

## NRA Sets "Floor" Prices for Tires

WASHINGTON—President Roosevelt has signed the Retail Rubber Tire and Battery Code. The code's outstanding provision permits establishment by NRA of minimum prices in the event of an emergency within the industry. General Johnson will declare the existence of such an emergency before the code goes into effect May 14.

The administrator will fix "floor prices" below which no retailer will be permitted to sell his merchandise. The "floor" prices for 4.75 x 19 in. tires are, class A tires, \$6.70 each; class B, \$6.05 each; class C, \$5.20 each. This schedule eliminates the use of third and fourth line tires as loss leaders.

The Retail Tire and Battery Trade Code, which is now completed and in the hands of the administrator, has been hanging fire for months because of the warring interests within the industry. The situation has approached a crisis that would mean bankruptcy to thousands of dealers.

Several weeks ago, NRA says, manu-

facturers of automobile tires and retail dealers brought evidence to the attention of the administrator that an extremely destructive price war had completely ruined the price structure for retail tire sales and that thousands of small firms and several of the small tire manufacturers were threatened with sudden extinction. The administrator called a meeting of those interested at which a 40-day truce was negotiated for the purpose of providing time to work out a satisfactory Retail Tire and Battery Trade Code.

## American C. & F. Motors

NEW YORK—American Car and Foundry Motors Co. report a net loss of \$1,131,664 for 1933 as compared with \$1,723,264 for 1932. Current assets of \$2,998,140, as of December 31, 1933, included cash, \$554,576, bills and accounts receivable, \$1,653,699, and inventories, at cost or market whichever is lower, \$789,868. Listed liabilities of \$7,045,617 on the same date included loans payable, \$6,614,795; accounts payable \$95,889, and accruals, \$334,933.



Fig. 1—Back panel is made interchangeable for all three Airflow models

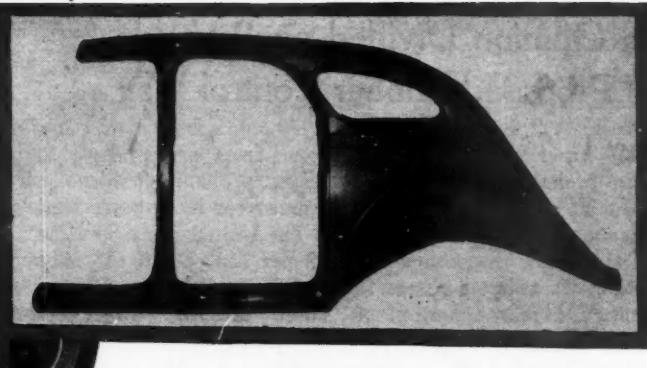


Fig. 2—Left side panel for Chrysler Imperial Airflow body is made in two sections joined by arc-welding about midway in the rear door opening

## Skillful Basic Production

**A**IRFLOW bodies represent an outstanding development on the part of the Chrysler organization. Previous descriptions in AUTOMOTIVE INDUSTRIES have stressed the features of body styling as well as the unique method of bracing upon which the body structure has been erected. Getting down to the details, we find that the responsibility for the body construction is divided—Chrysler makes the unique front end unit at the Dodge body plant, while the three main body panels are built by Budd, to Chrysler design.

Through the cooperation of the E. G. Budd Mfg. Co., we are showing details of the main body panels which illustrate in a striking manner the simplicity of the mechanical design behind a new conception of body styling. Not so long ago there existed a notion that the all-steel body construction was something reserved for the exclusive use of those specializing in great volume production. But during the past few years, Budd has changed the picture through the development of a technique which makes possible the use of all-steel construction not only on big production models but

through an entire line including models built in comparatively smaller quantities.

Briefly, the result is achieved through a modern conception of interchangeability involving two basic steps—interchangeability of many body parts by a unified design extending through the entire line; and the interchangeability of dies or portions of dies, resulting in reduced tool costs.

DeSoto and the small Chrysler eight use the same body panels, e. g., right and left side panels and back panel. The Imperial model has longer side panels with full rear door opening but uses the same back panel. The back panel, therefore, is completely interchangeable through the entire Airflow line.

The left side panel for the Chrysler Imperial is shown in Fig. 2. It is made in two parts through

interchangeable die construction, the forward section being joined to rear section by flash-welding about midway in the rear door opening. The chief difference between this panel and the one for the smaller models is that on the latter the wheel house projects into the door opening in the usual way. However, the side panel for the smaller jobs is made completely in one piece.

The back panel, interchangeable on all three Airflow models, is shown in Fig. 1. It is practically a flat stamping and paradoxically enough presents some problems because of its very simplicity. Fig. 4 is a view of the back panel from the inside to show the details of interior framing. Note particularly the massive bracing extending from the window framing to the very bottom edge. This serves two functions—it provides rigidity for the tire mounting; it acts as a strainer to prevent rumbling. Narrow strips of kersey cloth serve as insulation between the bracing members and the panel and also aid in damping vibration.

Fig. 3 is an interior view of the side panel revealing the strong, rigid, truss-bracing and framing which carries out the general scheme of the bridge type backbone

by Joseph Geschelin

Engineering Editor, Automotive Industries

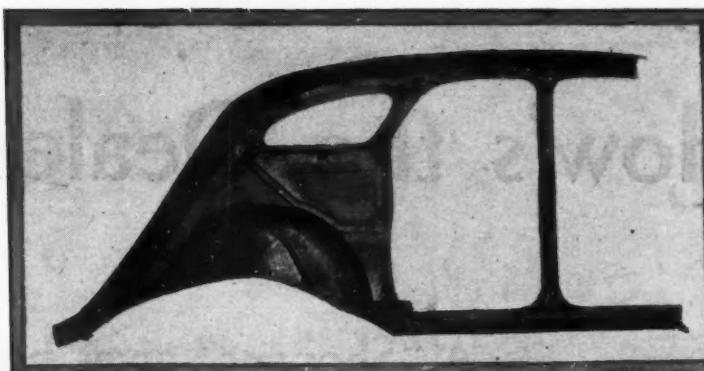


Fig. 3—View showing the framing and bracing of the back panel. Narrow strips of kersey cloth serve as insulation between the strainers and the panel, also aiding to damp vibration



Fig. 4—Inside view of side panel reveals the strong, rigid truss-bracing which carries out the general scheme of the bridge type backbone

## Side Design Simplifies of Airflow Bodies

about which the body structure is built.

In assembling, the three main panels are flash-welded along the back panel joints and then joined in a unit to the front section. Where the front section meets the side panel at the open ends, the header joint at the top is flash-welded on the outside and arc-welded on the inside. The lower end is gas-welded on the outside; arc-welded on the inside.

It takes a total of 23 individual operations to complete a side panel stamping in accordance with the following routing:

1. Blank

2. Roll
3. Wipe and oil
4. First form and slit for doorways and pierce 3 gage holes
5. Preliminary pierce window opening
6. Form pocket
7. Trim front end
8. Trim rear end
9. Preliminary trim door and final pierce window opening
10. Rough trim roof rear weld line and final trim chassis
11. Flange window opening, doorways and chassis
12. Rough trim doorways and final trim front weld lines
13. Final form roof depression
14. Final form window opening
15. Pierce bumper slots in Post "B" —hinge slots in post "D" and face of post "C" and notch for unishear and pierce 10 holes in face at bottom and restrike bumper depression
16. Pierce face of posts "B" and "D" and pierce bumper slots in post "C"
17. Final trim rear flashweld line
18. Final trim doorway opening
19. Trim roof
20. Sharpen roof
21. Finish form flange at rear end
22. Pierce 7/16 holes in wheelhouse
23. Pierce holes in sill flange

The foregoing brief description of the main panels for the Airflow bodies is a good commentary on the progress in the body building art. It should emphasize not only the simplicity of the construction but also the possibilities offered by the new conception of interchangeability.

Engineering planning coupled with these principles makes it possible to extend all-steel body construction economically through an entire line even though some of the models are in a comparatively small volume class.

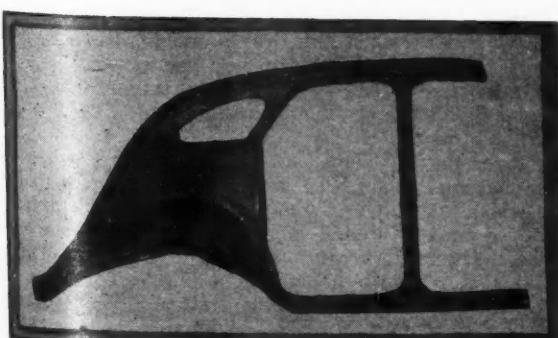


Fig. 5—DeSoto side panel is shorter than the Chrysler models and is made in one piece

# How's the Dealer Code

A "Shopper" gives his opinion after putting pressure on 38 dealers and finding that 14 of them could be induced to make concessions

"AFTER shopping 38 dealers, I can get from \$40 to \$60 more for my 1932 V-8 Fordor sedan than the figures printed in the N.A.D.A. Official Used Car Guide, either directly or indirectly from 14 of those dealers," George W. Connor says in an outstanding article in the May issue of *Automobile Trade Journal*. "If you call all those dealers 'chiselers' (which I don't)," he continues, "that's just about 37 per cent of the total."

With a background of automotive and general sales and advertising work plus experience as a Better Business Bureau investigator, Mr. Connor set out to get an answer to the question "How is the dealer code working?" Using several different used cars, he found almost universal enthusiasm for the code and a very general desire to live up to it. Dealers, he says, want to see it work, but many of them seemed to believe that they are almost forced to chisel in order to sell cars because nobody seems to know how to curb violators. Although recognizing that 100 per cent compliance can never be attained, he believes that dealer adherence to the code marketing rules would be greatly improved if, in each important town, one or two flagrant violators were prosecuted promptly and vigorously in the courts.

But to get back to his shopping experiences, some of the methods adopted to get around the code were rather obvious, while others were more devious. But let Mr. Connor tell his own story:—

I can have \$50 to \$75 "free service" if I buy a new Auburn, Ford or Oldsmobile.

If I become "a little pressed" for money when any of my installments

fall due, I know a very nice Ford dealer who said he would "help out on one or two of them" with his personal check.

I have a \$3.50 fountain pen that I can sell for \$60 to one dealer who has been "wanting a pen just like that for a long while." And—oh, yes—I almost forgot to say that he, too, was more than mildly interested in selling me a new car and taking in my old car at not one cent more than the code allowed!

Twelve dealers out of 38 couldn't allow me a nickel more for my used car than the "\$354" in their Bible! Yet, every one of them (the dirty dozen) knew somebody who would buy my car immediately—without even looking at it—for from \$400 to \$425. And what made the whole thing more bewildering was this: Seven or eight of them knew where they could sell my car for \$400 to \$425 sight unseen, had cars just like mine standing on their used car floors, and none of them seemed to have thought of selling one of their own cars to those hot prospects that were so anxious to buy my car at \$46 to \$71 more than the book value.

And why were they so secretive about these transactions? It couldn't be known that they were helping me to dispose of my car. Probably I wouldn't have gotten suspicious myself if one dealer, who finally tore up my card under my nose and told me he didn't do business with "chiselers," had not flatly refused to "find a buyer for my car" when I suggested it, saying: "That's just one more way in which we don't chisel our code." I admired that dealer, and if I'm ever in the market again he can have my business.

Another thing about these "hot" used car prospects disturbed me. Quite a

few of the salesmen who called them up in my presence were so familiar. An Oldsmobile salesman asked me if I would close for \$60 more than the book value, and when I agreed he went to the telephone and I heard him say: "That you, Rose? Well, Jack there? Well, listen. Just tell him I've got a car for him. 1931 Nash, \$250. Okay." Then he explained to me that it was not convenient for the prospect to come over and see the car, but if I signed the new car contract on the basis of the \$60 "chisel" of the code book figure, everything would be "jake."

Only last month I read in *American Mercury* how hard "Henry" makes it for Ford dealers. According to that story, there must be days when some of them can't save a nickel. Yet, I found one who had more dough than Henry ever suspected one of his dealers of having, I guess. He's certainly a big-hearted fellow, and he's for the code. But, he just couldn't see me buy a Ford car and then go home and worry myself sick about the payments. He said: "Let's not dicker about \$50 or \$60. Go ahead and enjoy a nice, new car. If it needs a little service during the next six months, run it in and we'll take good care of you—at no cost to you. And, if you're a little strapped when the first payment or two comes due, come up and see me—er—personally." And as his thumb flexed my floating rib, he inquired: "Do you get me?"

Then there was another Ford salesman who was "sure" he could find a buyer for my car at \$46 "up". I said: "Well, I hope you find one before May 1, because I want to take the Missus and the kid on a trip." To which he replied, confidentially: "Leave that to Mr. Murphy"—who was the proprietor

# Working?

Most chiseling of the dealer code would be stopped, Mr. Conner believes, by prompt and vigorous court action against one or two flagrant offenders in each important town



of that particular Ford agency, only that wasn't his name.

One experience nettled me not a little. I was all ready to do business with the "hot" prospect of a Hupmobile dealer, when the salesman insisted that I make a \$50 deposit on the new car before he got on the telephone to arrange for the sale of my old car to the bird who was so anxious to buy it without seeing it. Could it be that he did not trust me?

And then there was that deal in the Hudson-Essex place, just after the Terraplane took a price advance of \$35. After much haggling we were only \$36 apart. So the salesman said: "Well, congratulations. You are practically the proud owner of a Terraplane right now. I'll just call up the local code committee and get their permission to make a special ruling for you, permitting you to buy this wonderful new car at the old delivery price, which is \$35 less than the present one. Now, we'll go round the corner and christen your new car with that other dollar. Let's go."

In 38 contacts, I met only one dealer who seemed ready to "chisel" the first time I walked into his place.

Five out of 14 began to show the whites of their eyes when I called the second time.

To the credit, if anything, of the eight others, I must record that it was only after I had repulsed their "code-pure" advances for the third time that they "weakened."

In justice to the Ford dealers I think I ought to emphasize that while I mentioned them oftener than any other dealers, I actually called on more of them than any others, with the exception of Chevrolet. On my shopping score card, I placed green check marks for the dealers to whom I gave a clean bill of health, and red check marks against those with whom I was quite sure I could have done a little plain or fancy chiseling.

I notice now that the Ford score reads four red marks out of eight, as against three red marks out of eight for Chevrolet dealers. The three Buick-

Pontiac dealers I called on were "like Caesar's wife." So were the two Nash dealers, one Cadillac-Oldsmobile dealer, and one Studebaker dealer that I visited. Three Chrysler-Plymouth dealers produced one red mark. Three DeSoto-Plymouth dealers also showed a record of two to one in favor of truth, virtue and righteousness. The two Dodge-Plymouth dealers split the record right down the middle, one yes, one no. The same comment might be made concerning the two Hudson-Essex dealers and the two Graham-Paige dealers, because in each case one got a green mark and the other got a red one. It is unfair, probably, to mention any make of car where only one dealer was approached. But, since I've handed "bouquets" to the Cadillac and Studebaker dealers on which I made the (celebrated and much pooh-poohed "one-stop") survey, it probably should be recorded, just for the sake of statistical balance, that there do happen to be red marks against the Auburn and Hupmobile "one-stop survey" victims.



Start of metal finishing line in new Dodge truck plant. Operation shows trimming and touch-up of welds by means of acetylene torches

### Making History

It has become an old custom with us to preview Budd railcars. History was made last week during the preview of the three-car train of stainless steel, shot-welded, which was built by Budd for the C. B. & Q. railroad. The Zephyr made 104 m.p.h. propelled by its Winton eight-in-line diesel rated at 660 hp. Several curves on the main line of the Reading were taken at 90 m.p.h. without batting an eyelash. There was one dramatic incident. To test the streamlining theory, bags of confetti were dumped simultaneously from both sides of the train while going about 90. These flimsy bits of colored paper followed the sides of the car, met and merged at the tail end as if they were metal particles in a magnetic field. Then they dropped right on to the track.

### Who Won?

Hughes brothers, printers in Stroudsburg, Pa., ask who won? They were accused of intimidation by the A. F. of L. because they objected to outside unionization of their 350 men. An inspector of the NRA investigated and advised them to sign up with the A. F. of L. as a condition of freedom from Federal prosecution. When they signed a union contract, the company sent a memo to all employees advising them that a union card was now a prerequisite of employment. As a final act in this unique drama, one of the

Hughes brothers wrote the N.L.B. inviting it to prosecute the company for violation of Article 7a on the ground that it had coerced employees into joining the union. The correspondence remained unanswered but unofficially the company was told that no violation existed. Who won?

### Mostly Automotive

At the annual meeting of the stockholders of the International Nickel Co., Robert C. Stanley, president, reported that the world's output of nickel goes into different uses about as follows:

Alloy steel used in motor cars, trucks and buses .....	20%
Nickel silver and nickel copper alloys for a multitude of uses .....	18%
Pure rolled nickel in the form of rods, strip, wire, and tubes, used largely in the radio, in the chemical industries and for coinage.....	17%
Alloy steel, inclusive of stainless steel, used in railroad equipment, farm implements, general machinery and numerous miscellaneous applications .....	15%
Nickel for plating and as undercoat in chromium plating .....	10%
Monel metal used for many engineering purposes and for household equipment .....	9%
Alloy cast iron—castings of all kinds. Miscellaneous uses including magnetic alloys, nickel brasses, nickel bronzes, nickel aluminum alloys and white gold .....	4%
Heat resistant and electrical alloys...	3%
Total .....	100%

Of these totals at least 50 per cent goes to the automotive industry!

### Metal Statistics

The 27th edition of Metal Statistics is off the press. In it you will find in compact but complete form,

## PRODUCTION LINES

a record of production, consumption, imports and exports, etc., and other vital statistics on finished and semi-finished ferrous and non-ferrous materials as well as raw material. Several additions have been made to the sections on economic subjects in keeping with the tenor of the times. This enlarged edition of the well-known handbook completely indexed is priced at \$2 the copy. Published by the American Metal Market, New York.

### Now Standard

Just a year ago we published a comprehensive survey of the use of valve seat inserts. What great changes have been wrought in the space of a year. A quick digest of data we have collected for an article on current practice indicates that inserts have been adopted almost universally for all manner of heavy-duty engines. In fact there is now evidence of decided standardization as to materials, dimensions and method of installation. For this, especial credit is due to the several parts makers who supply the inserts to the industry.

### Automatic

Look for profound changes in manufacture. The next step, so far as we see it, is going to be automatic loading applied to an entire line of production equipment. Under the surface there is considerable development along this line.—J. G.



# Largest Aircraft Diesel Is Inverted V-12 with Predicted 1200 HP. Output

Engine is a two cycle design weighing 2400 lb. and may be run in either direction—Accessories and superchargers protected by safety clutches

by P. M. Heldt,

Engineering Editor, *Automotive Industries*

**W**HAT is undoubtedly the largest Diesel-type aircraft engine yet built has been completed at the plant of the Lambert Engine & Machine Co., Moline, Ill., from designs of D. J. Deschamps. Mr. Deschamps was formerly with the Minerva Company of Belgium, for which he designed an aircraft engine of the sleeve-valve type. The writer understands that while the engine here described has been built, development work on it was interrupted by the death of the financial backer, but efforts are being made to secure new backing and go on with the work.

The engine is an inverted twelve-cylinder V type working on the two-stroke cycle, of 6 in. bore and 9 in. stroke, making the displacement 3052 cu. in. The two banks of cylinders make an angle of 30 deg. with each other, which gives a compact powerplant with minimum frontal area. In fact, the front elevation can be enclosed in a rectangle 26½ in. wide by 49-9/16 in. high. Complete with all accessories, including starter, air compressor, double fuel strainer, fuel booster pumps, fuel lines, superchargers, torsional vibration damper, safety clutch for the accessories drive and over-running

clutches for the supercharger drive, the engine weighs about 2400 lb. or 2 lb. per hp. It works with a compression ratio of 16 to 1.

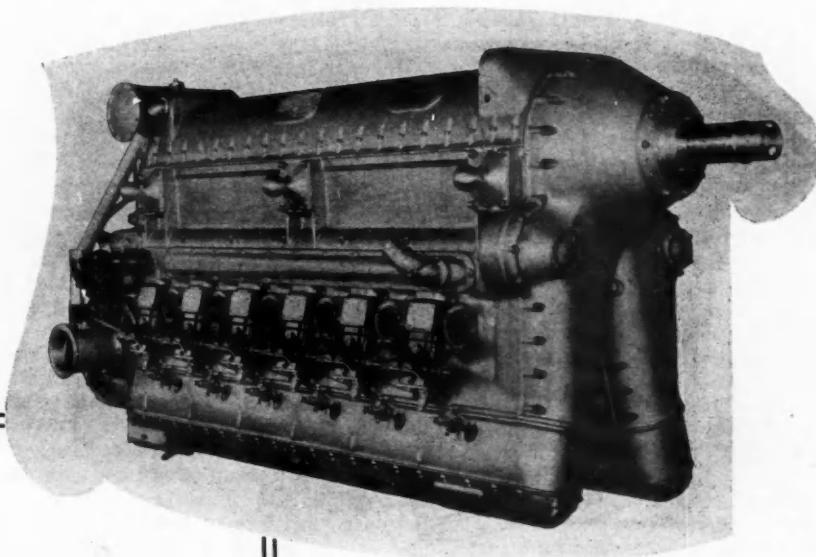
Starting is by compressed air and means are provided for relieving the compression of either bank of cylinders. With the object of increasing the general safety factor, all important accessories are provided in duplicate, and great care has been taken to minimize trouble with the "plumbing" of the fuel and cooling systems. In fact, each bank of cylinders has an independent cooling, fuel, lubrication, and scavenging system, so that the powerplant virtually

consists of two engines with only the crankcase and the crankshaft common to both. If necessary, one bank of cylinders could be shut off and the ship landed on the remaining bank. Each cylinder has two injection valves, supplied by individual fuel pumps, so trouble with the injection system is pretty well guarded against.

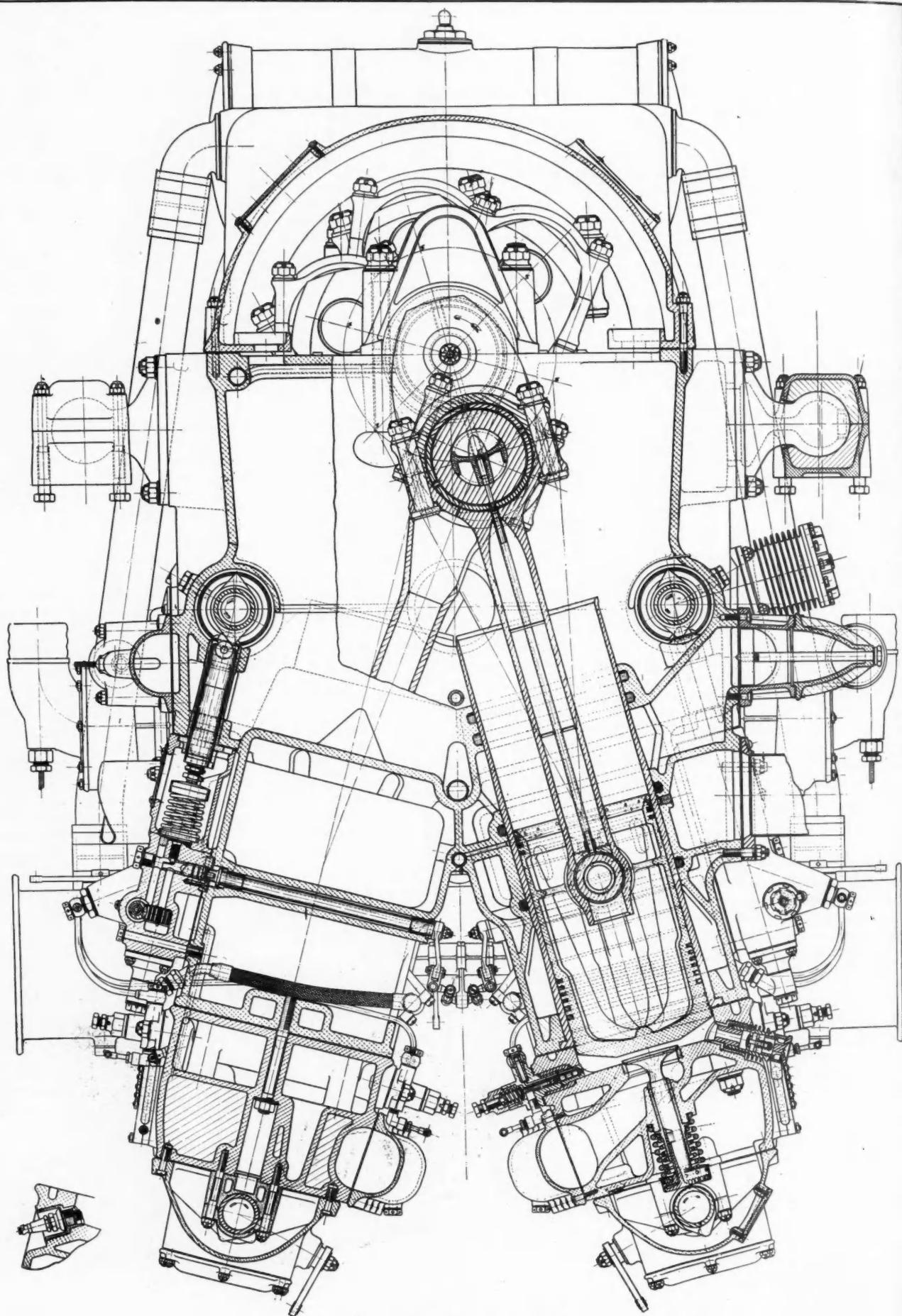
The experimental engine was designed to be reversible, so as to meet the requirements for use on airships. On airplanes the reversing feature is not necessary, but Mr. Deschamps considers it valuable there, too, since it would make it possible to brake by means of the propeller in the event of an emergency landing.

From tests of a two-cylinder experimental engine of the same cylinder dimensions it is expected that this twelve-cylinder engine will develop 1200 hp. at about 1600 r.p.m. A normal continuous output of 900-1000 hp. is figured on.

Cylinder blocks and crankcase are in a single casting of magnesium alloy. The crankcase is substantially ribbed for increased stiffness, and the bearings are supported by box girder-type partition walls. Cylinder liners are made of



Deschamps inverted V-Diesel-type aircraft engine



Transverse section through Deschamps Diesel-type aircraft engine

nitralloy steel and hardened on the inside to 900-1000 Brinell.

It will be noticed that the exhaust collector, which surrounds the cylinder, is supported in such a way as to allow it the maximum freedom of expansion. The cylinder heads are cast in an aluminum alloy, in a single unit for each bank of cylinders.

Scavenging air is supplied by two General Electric centrifugal compressors, one for each bank of cylinders. These are driven at 13½ times crankshaft speed, and at normal engine speed they deliver 25 per cent more air than the displacement of the engine. Scavenging air is normally delivered at a pressure of 12 lb. per sq. in. gage. Tests with the two-cylinder experimental engine showed that a pressure of 8 lb. gage is required to effect proper scavenging at 1600 r.p.m., so 4 lb. per sq. in. is available for supercharging. A butterfly valve on the air intake of the compressors enables the pilot to adjust their output.

Air from the superchargers enters the cylinders through two valves in the head, which open and close in unison. Two valves are used instead of a single one to reduce the inertia and to enable the valves to open and close very quickly without excessive strain. A compression-relief mechanism enables the pilot to shift the camshaft axially, thereby bringing a special cam in line with the valves, which keeps them open during the compression stroke. An automatic locking device secures the cam-shaft in either of its two working positions. Exhaust gas leaves the cylinder through twelve ports at the bottom of the stroke.

### Piston Rings Protected Against Sticking

A special feature embodied in the piston design is intended to prevent a trouble often experienced with two-stroke engines—that of top rings sticking, due to carbon formed by the combustion of oil on top of the piston being carried to them by the exhaust gases. To prevent this from happening, the top ring is located sufficiently low down so that it is completely covered by the cylinder walls before the exhaust ports open.

Special pains were taken to assure adequate cooling of the bridges between exhaust ports, to prevent distortion of the liner and assure long life of rings. The top and bottom edges of the ports are rounded, to prevent the rings from catching on them. Pistons are of Y alloy and are provided with deep radial cooling ribs.

One of the features of the engine on which a patent is pending is a method of locking the inner race of the thrust bearing without cutting a screw thread on the shaft adjacent thereto (which is always a source of weakness). A two-piece threaded sleeve is located between the inner race and a shoulder on the shaft, and the customary lock nut

screws over that sleeve. When the nut is tightened up the sleeve is being pulled against the shoulder on the shaft, while the nut ends up against the inner race, thus assuring a secure locking effect. Means are provided to prevent the sleeve from turning while the lock nut is being screwed on or off. A particularly attractive feature of the device is that the threaded sleeve need not be a close fit in the space provided for it on the shaft.

### Injection Equipment of Own Design

When Mr. Deschamps started the design of the engine he had certain ideas regarding the requirements to be made of the injection pump. Finding no pump on the market that met all of these requirements, he designed one himself.

The problems involved in the design of an injection pump are particularly difficult when it is intended for a two-stroke engine, because the frequency of injections is twice as great. To prevent the maximum operating speed of the engine being limited by the pump, a double pump is used for each cylinder, the cams operating the two plungers being set at 180 deg. and the pump shaft geared to turn at one-half crankshaft speed. Each cylinder has two injection nozzles, arranged opposite each other, and so that the fuel spray enters the combustion chamber tangentially instead of radially, which induces a swirling motion of the air in the chamber. The charge of fuel delivered by the pump divides between the two nozzles. Injection at two oppositely located points is said to improve the combustion, and the system in addition adds to the reliability of the powerplant. In case one of the injector valves should stick, all of the fuel would be injected through the other nozzle and—the same as with dual ignition—though there would be a slight loss in power, the cylinder affected would not be cut out entirely. Also, although the pressure in the fuel line would be increased if injection were confined to a single nozzle, there would be no such extreme pressure rise as with the valve in a single nozzle on the line stuck tight.

Another difficult problem in the design of a Diesel aircraft engine is that of ensuring smooth low-speed idling. The difficulty is connected with accurate metering of the very small fuel charges required. This has been solved in the engine under discussion, the designer avers, by providing means for cutting out one of the two injection pumps provided for each engine cylinder. The result is that there is then an explosion in each cylinder at each second inward stroke of the piston, so that the engine "four-cycles." Power impulses still follow one another in the same order, vibration is not increased, all of the cylinders are kept warm and thus are ready to deliver maximum power instantly when required. This cut-out valve can be hooked up with the main

fuel-control valve, for simplicity and convenience.

Lubrication is by the dry-sump, pressure system throughout, except for the bearings of the forked rods. In two-stroke engines with exhaust through cylinder ports, trouble is often experienced from excessive oil consumption and smoky exhaust, due to loss of oil through the ports. This is guarded against in this engine by cutting a small horizontal groove in the cylinder liner about  $\frac{1}{2}$  in. below each port, a little shorter than the width of the port. At the center of this groove there is a  $\frac{1}{8}$  in. hole through the liner, which empties into a groove cut all around the cylinder casting. The grooves in all twelve cylinders communicate through drilled passages with a central tube connecting to a vacuum pump, thus preventing waste of oil. Since the grooves below the ports are not quite as long as the width of ports, some of the oil remains on the piston, but it is carried up over the lands, so that the upper end of the liner is still adequately lubricated. The degree to which the pistons are stripped of oil can be easily regulated by changing the vacuum, which is produced by a special double vane-type of pump of constant suction.

### Safety Couplings in Accessories Drives

At the rear end of the crankshaft there is a Lanchester torsional vibration damper, and this is connected with a safety coupling which protects the camshaft drive against excessive torques. The driven member of the safety coupling ends in a tubular shaft, splined at its end to take the accessories driving pinion. This pinion is not mounted directly on the tubular shaft but has a shank which is supported in two bearings, one ball, the other roller, the ball bearing serving as thrust bearing as well. At the centre of the bevel pinion there is a driving hub splined to the tubular shaft, which drives the pinion through eight coil springs, the whole assembly forming an elastic drive.

The bevel pinion referred to in the foregoing drives a vertical shaft at twice crankshaft speed, and this in turn drives a horizontal shaft from which all engine accessories are driven, through a pair of miter gears, all the gears of this train being of the spiral bevel type.

The use of over-running clutches in the supercharger drive affords an incidental advantage, in that it protects the driving gears from excessive stresses. A Diesel engine, owing to its very high compression, stops almost instantly when the fuel is suddenly turned off. Since the compressor impellers run at as high as 21,600 r.p.m., there would be danger of injuring them by a sudden closing of the throttle, even though the impellers and the drive gears are fairly light, if the drive were rigid in both directions. The over-running clutch, of course, prevents excessive strain on the parts in that case, allowing the impellers to stop gradually.

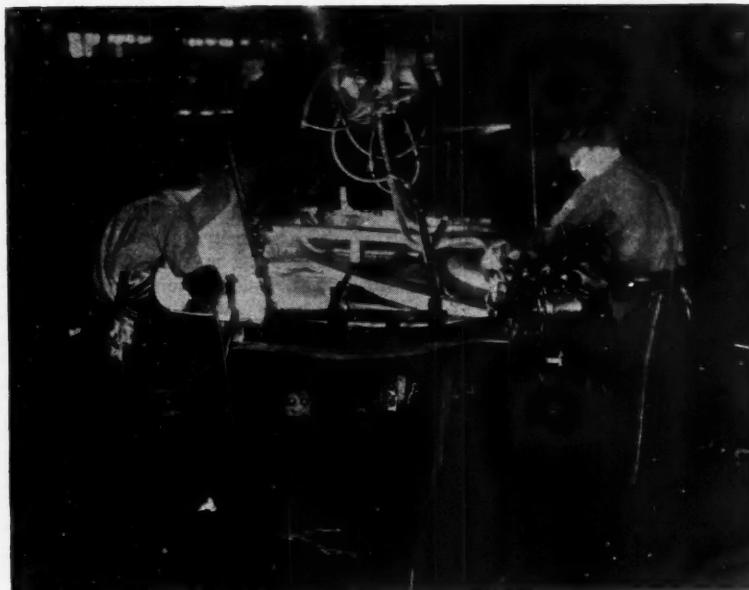


Fig. 1—Body panels for Dodge trucks and commercial cars are sub-assembled by welding on jigs. This view shows one of panel body side-panels

by Athel F. Denham

Detroit Editor, Automotive Industries

## Close Scheduling Chassis Assembly

The layout obviously required a fine control of production schedules for individual truck components, since little space could be spared for the stocking of finished parts. As a matter of fact, there is practically no finished body storage, lines being so scheduled that the chassis reaches the end of the body finish line at the same time that the body comes off.

Since many of the bodies require special finishes—a variety of color options being offered—careful routing is required. For this purpose, a telautograph system connecting the key points of production origin is now being installed in the plant. Up to now, this communication service has been performed by a crew of special messengers working out of the control room.

The setting up of the plant on this modern high-production basis has involved the purchase of considerable new equipment. Particularly noteworthy in this respect is the installation of eight body ovens, a battery of automatic wash, acid and rinse booths, and a half dozen booths in which prime coats and paint and lacquer finishes are applied to bodies.

Because of the wide variety of

colors used in finishing bodies, all lacquer is piped to the different booths from a central control room in which a battery of lacquer mixers and agitators is located. As a precaution against fire hazard, the agitators are housed within a fire-proof room. The agitator pumps are driven, by extension shafts, from motors located outside the room. Each of the motors and agitators is individually operated and controlled so that quick change-over from one color to another is possible. Inside the spray booths individual nozzles are provided for the different pipelines and colors.

The body production lines are of more than ordinary interest. At present, three standard body types and a cab are produced, the former consisting of two sizes of panel bodies and a sedan delivery. The assembly of each of these all-steel bodies is on a separate line.

The accompanying illustrations show the general method of assembly, consisting mainly of multiple electric spot and acetylene torch welding on jigs. The procedure is to weld together individual body panel and frame work reenforcing

PRACTICALLY complete synchronization of chassis assembly lines and body production is a main feature of the recently revamped truck plant of Dodge Brothers Corporation in Detroit.

All manufacturing and assembly operations are now carried on under one roof, on a single floor—except for the production of some chassis units, such as engines, transmissions and axles. Included in the activities of the truck plant are complete set-ups for the production of all types of standard bodies and cabs, upholstery and trim lines, sheet metal and body finishing, chassis assembly, and final assembly of the vehicles.

assemblies as in Fig. 1. Next, the insulating and sound deadening materials are applied to the panel assemblies. Body frame ribs are then welded to the panels, there being separate set-ups for left and right-hand panels.

After this, the bodies are assembled on large pigs, as in Fig. 2, the operation including such parts as body cross-members at doors and cab stampings on panel bodies. In the next step, the floors—which have been sub-assembled separately, are added to the bodies. The body now goes on a conveyor where welds are touched up, if necessary, with acetylene torches. Weld flashes are trimmed off with rotary brushes, and hand-scraped. Rotary brush polish-

ing also precedes file trimming, after welds have been trimmed with solder in the usual manner.

Doors—separately assembled out of two major stampings—reach the body line at this time and are hung on the bodies. Door assembly is on air-clamp jigs on which the two stampings are lock-seamed by rolling over the edge of the outer panel with air hammers, as shown in Fig. 3.

After passing over the hardware and trim assembly conveyor, the bodies are put on the main body finish conveyor which doubles back and forth twice through the plant. First, however, the bodies pass through a booth in which air hoists are provided for lifting them off the conveyor line to permit the ready ap-

plication of paint to the underside.

The installation of roofs is reserved until nearly the end of the line, roofs being assembled separately and pressed into the body assembly by means of overhead jigs, after which they are properly sealed.

## Synchronizes Body and in New Dodge Truck Plant



Fig. 2—After sub-assembly of various panels the entire body is assembled in one set-up jig by spot welding as shown in this view.

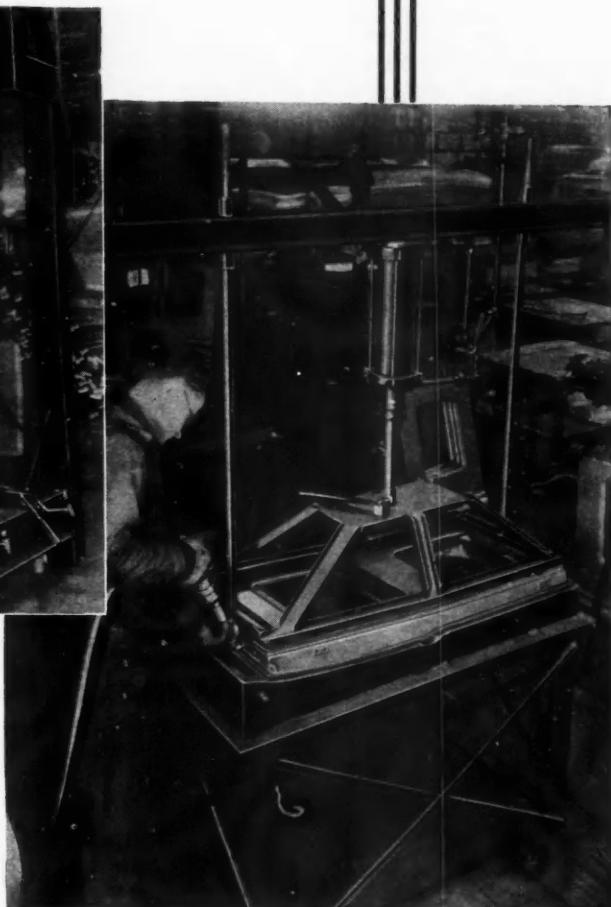


Fig. 3—Doors are assembled on air-clamp jigs out of two stampings by rolling over edges with air hammers as shown here

# New Method Simplifies Measurement of Transmission Efficiencies

**W**HAT appears to be a new method of determining the efficiency of a transmission or a speed reducer was made use of in determining the efficiency curves of three transmissions of the Friedrichshafen Gear Works in the Motor Vehicle and Mechanical Laboratory of Karlsruhe Technical College.

It is rather difficult to determine the input torque of a transmission, as this could be done only by either inserting a transmission dynamometer between engine and transmission, or by mounting the whole engine on ball bearings concentric with the crankshaft and measuring the torque reaction. The feature of the method employed is that it is unnecessary to measure the input torque; all that needs to be measured is the output torque and the torque on the transmission housing.

Referring to Fig. 1, let

$M_1$  be the input torque derived from the engine, this torque being right-handed.

$M_2$ , the torque reaction due to the output torque, which, for the forward speeds, is opposite in direction to the input torque.

$M_v$ , torque which must be applied to the transmission housing in order to overcome the torque on the housing due to friction, fluid resistance of the lubricant, etc.  $M_v$  is left-

handed, as it naturally must act in opposition to the input torque.

$M_u$ , torque which must be applied to the transmission housing to overcome the torque on it due to any possible difference between input and output torque due to a change in speed within the transmission. In the conventional transmission there are only speed reductions, and the torque  $M_u$  must then be right-handed.

The sum of the four torques naturally must be equal to zero. That is,

$$M_1 + M_u - M_2 - M_v = 0$$

and

$$M_1 = M_2 - M_u + M_v$$

Representing the angular velocities of the driving and driven shafts by  $\omega_1$  and  $\omega_2$  respectively, we have for the efficiency of transmission—

$$e = \frac{M_2 \omega_2}{M_1 \omega_1} = \frac{M_2 \omega_2}{(M_2 - M_u + M_v) \omega_1}$$

Representing the reduction ratio  $\omega_1/\omega_2$  by  $r$ , we get

$$e = \frac{M_2}{r (M_2 - M_u + M_v)}$$

$$= \frac{M_2}{r [M_2 - (M_u - M_v)]}$$

In this equation  $(M_u - M_v)$  is the measured torque of the transmission housing. The transmission is mounted separately on ball bearings and provided with a torque arm.

The torque on the housing ( $M_u - M_v$ ) must be regarded as positive when it is right-handed, that is, when  $M_u$  is greater than  $M_v$ , and as negative in the opposite case. With the equipment used it was possible to determine both the input torque and the output torque to a limit of error of 0.14 lb.-ft.

A complete report on these tests, covering both the methods used and the results, appears in the Jan. 10 issue of *Automobiltechnische Zeitschrift*.

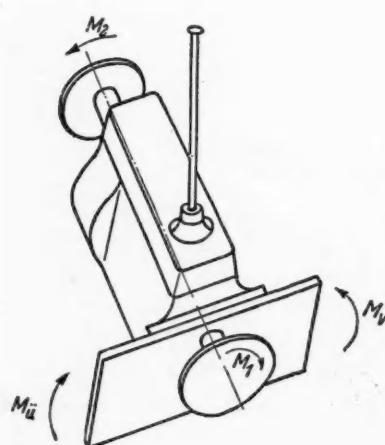
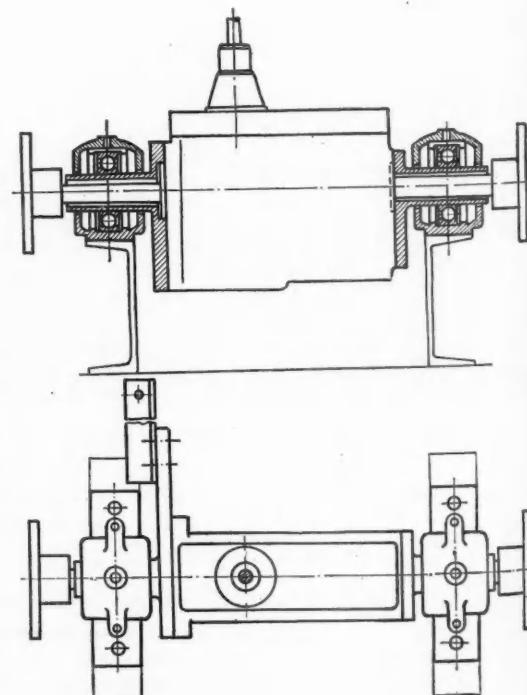


Fig. 1—(Left) Diagram of turning moments (torques) acting on the transmission  $M_1$ , crankshaft torque;  $M_2$ , propeller-shaft torque;  $M_v$ , torque reaction of frame necessary to balance torque due to internal friction;  $M_u$ , torque reaction of frame to balance any difference between crankshaft torque and propeller-shaft torque





Close-up of sodium lighting unit

## Sodium Vapor Lamps May Provide Answer to Night Driving Problem

Tests of new units on important highways here and abroad give promising results

DURING the past year numerous experimental installations of sodium vapor lamps for highway illumination have been made both here and abroad. This new lamp is particularly adapted to road illumination, because it has a higher luminous efficiency than any other type of electric lamp, and it gives a soft, diffused light of substantially a single color, which promises new standards of visibility and freedom from glare.

Most of the energy output of the lamps is in the characteristic orange-yellow color of sodium, giving the lamp a greater proportion of visible light to other radiated energy than that obtained with other light sources. Forty to 50 lumens per watt of power consumption can be obtained in lamps having a useful life of 1350 hours or more, according to the claims of the makers, while ordinary incandescent lamps of comparable size, give 15 to 18 lumens per watt, so that the sodium lamp is nearly three times as efficient.

The term "lumen" used in the foregoing comparison probably is not as familiar as the more commonly used term "candle power," and it may be explained that a lumen is the light flux per unit solid angle emitted by a source of one candle power which radiates light uniformly in all directions. Such a source therefore

emits a total of 12.56 lumens, and this figure may be regarded as the ratio between the candle power and the lumen. The relationship, of course, is not absolute, since candle-power measurements determine the intensity of light flux in one direction only and no practical source radiates light equally in all directions.

Tests are said to indicate that the quality of light emitted by the sodium vapor lamp assures definition of small objects at low intensities to a greater extent than any other, including the "white light" or continuous spectrum of the incandescent lamp.

That an unusually high efficiency could be obtained from sodium vapor lamps has been known since 1917, but earlier lamps of this type had several defects. They called for the use of continuous current, which cannot be transmitted economically over long distances, and the sodium vapor attacked the glass bulb. The lamp has now been adapted to the use of alternating current, and a glass has been found which withstands the effects of the vapor.

Road lighting installations of sodium vapor lamps are found abroad

between Paris and Versailles, at Bonn and Munich in Germany, and in several other places. In this country there are such installations at Revere, Mass. (cloverleaf road intersection), Newton, Mass. (a one-mile stretch of the Boston-Worcester Turnpike), Wallingford, Conn. (a section of Route No. 5 between New Haven and Hartford), at Schenectady, N. Y. (the first such installation in this country), and at Port Jervis, N. Y.

Most of the American installations have the new General Electric lamp illustrated herewith. With an overall energy input of 275 watts or less, this lamp produces 10,000 lumens, whereas incandescent lamps of equal power consume 550 watts. The sodium vapor lamp itself requires 240 watts, and the transformers and other equipment account for an additional 30 to 35 watts.

The lamp itself consists of a long bulb of special glass enclosing at each end a coiled, oxide-coated filament, which serves as cathode, and an open-ended box of molybdenum, which serves as an anode. Each lamp, therefore, has two anodes and two cathodes. The anodes are electrically connected to one side of the filament

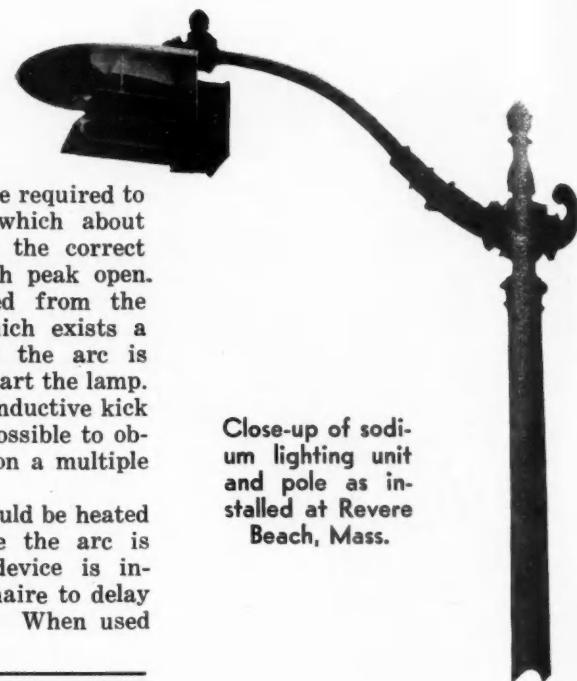
coil, so that only two conductors lead from each assembly.

In the bulb there is a small quantity of sodium and some neon gas, the neon being used to start operation. The lamp is about 16 in. long from tip to base, and about 3 in. in diameter. A double-walled, evacuated flask, about 4 in. in diameter and 16½ in. in length, is used with the lamp to retain the heat, this being necessary to the proper vaporization of the sodium.

To operate the lamp, each cathode is supplied with 10 amperes exciting current at 2 to 3 volts, this current being derived either from auxiliary transformers or from auxiliary windings of the arc transformer. The lamp is rated at 6.6 amperes arc current, and in case of series-circuit operation it can be supplied from a transformer with 6.6-ampere or any other normal primary rating. Ap-

proximately 200 volts are required to strike the arc, after which about 27 volts will maintain the correct current flow. The high peak open-circuit voltage obtained from the series transformer, which exists a very short time after the arc is struck, can be used to start the lamp. A device providing an inductive kick for starting makes it possible to obtain similar operation on a multiple circuit.

Since the cathode should be heated about a minute before the arc is struck, a time-delay device is incorporated in the luminaire to delay the starting that long. When used



Close-up of sodium lighting unit and pole as installed at Revere Beach, Mass.

## BOOK REVIEWS

### Chrome Plating

*Die Verchromung (Chrome Plating)*, by Professor Dr.-Ing. O. Bauer, Professor H. Arndt, and Dr.-Ing. W. Krause. Published by M. Krayn Technischer Verlag, Berlin.

This book, which bears the subtitle "With special reference to its application in automobile production," is based mainly on a series of tests of chrome-plated automobile parts made in the Government material-testing laboratory in Berlin-Dahlem, with which the authors are connected. These tests were made at the instigation of the German Association of Automobile Manufacturers, whose members furnished about 100 chromium-plated auto parts for the tests. The book deals not only with the objects, methods and results of the tests, but discusses the problems of chromium plating generally, under consideration of the literature of the subject.

The metallic coatings of the parts supplied for tests (some of which were of non-German origin) were tested for the following qualities:

1. Chemical composition, thickness of coating, and uniformity of thickness;
2. Exterior character, color, brightness, surface defects;
3. Adherence and ability to withstand distortion;
4. Hardness and wear resistance;
5. Resistance to high temperatures;

### 6. Resistance to corrosive agencies:

- a. by determination of porosity;
- b. by potential-difference measurements;
- c. by practical corrosion tests.

### Thread Handbook

*Dardelet Thread Handbook*, published by Dardelet Threadlock Corporation, 120 Broadway, New York.

This book of 220 pages deals with the Dardelet self-locking thread from a strictly technical standpoint and also contains much technical data on screw threads and related subjects. Results of numerous tests on Dardelet thread nuts and bolts in comparison with standard nuts and bolts are given, including the relation between torque applied to the nut and the resulting tension in the bolt, the effect of thread wear on this relation, the effect of length of thread exposure on static tensile strength and energy of rupture, shock resistance, and electrical resistance of contact between bolt and nut. Much information is given also on the subject of threading bolts and nuts with the Dardelet thread, on heat treating, plating and gaging the threads or threaded parts. One section of the book is devoted to applications of the thread, and this shows a valve-rocker arm in which the adjusting screw has a Dardelet thread.

on a series circuit, a film cut-out is shunted across the arc transformer to cut out the lamp in case it does not start properly.

When the tube is cold, the application of starting voltage strikes an arc in the neon gas within the tube. The lamp then glows brilliantly with the characteristic red color of neon. Sufficient heat is soon stored up to vaporize the sodium, and the lamp gradually acquires the characteristic orange-yellow color of the sodium arc. About 30 minutes are required to build up the sodium light to maximum output.

The lamps have more than 100 sq. in. of light-radiating surface, and an entirely different type of reflector is therefore required than with incandescent bulbs, which are generally dealt with on theory that they have a point source of light. The upper part of the highly polished reflector unit resembles an airplane in its lines. Below this surface are polished fins, one on each side of and parallel to the light source. These fins and the parabolic cylindrical surfaces of the upper reflector direct the light along the highway. The end of the upper reflector is also finished with a parabolic curve to direct the light across the highway. The fins redirect the light which otherwise would escape upward beyond the edge of the upper reflector.

The reflectors are of aluminum and are treated by the new Alray anodic process which hardens the surface, increases the reflecting power, prevents oxidation, and makes the surface easy to clean.

# Getting Equal Strokes in Vee Engine with Articulated Rods

by C. H. Powell

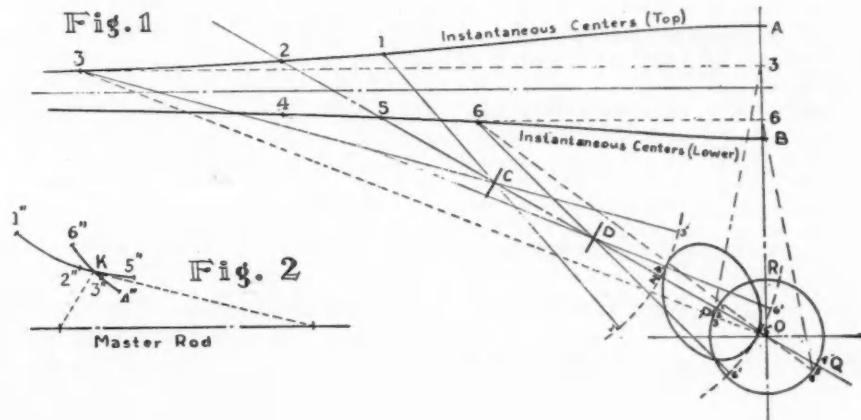
It is assumed that the stroke, angle between banks, length of master rod and the length of auxiliary rod are all given.

It is desired to find the exact location of the knuckle pin on the master rod so that the stroke on the bank with the auxiliary rod is equal to that on the master-rod bank.

In the Fig. 1, ABO represents the axis of the bank with the master rod and CDO that with auxiliary rod. PRQ is the crankpin circle.

Set off near P several numbered points, 1, 2, 3; likewise another set of points, 4, 5, 6, near Q.

Draw the instantaneous centers of the master rod for these posi-



tions. These are readily found from the intersection of a line drawn from O through the point in question produced and a perpendicular on the master rod bank axis at the corresponding point of the master piston pin. Instantaneous centers for points 3 and 6 are shown obtained this way in Fig. 1.

There are two sets of these in-

stantaneous centers, one corresponding to the top dead center of the "auxiliary" bank and the other to the lower dead center.

Let C and D represent the top and lower dead centers of the "auxiliary" bank.

Join the instantaneous centers to their corresponding dead centers.

From C draw an arc 1 ft., 2 ft., 3 ft. of radius equal to that of the auxiliary rod. Similarly arc 4 ft., 5 ft., 6 ft., from D. Number the points of the arcs to correspond with the lines from the instantaneous centers through C and D.

Now take a piece of transparent paper (Fig. 2), with a straight line on it marked off equal to the master-rod length. Place this straight line in its successive positions corresponding with the numbered points on the crankpin circle. In each position mark the points 1 ft., 2 ft., 3 ft., 4 ft., 5 ft., 6 ft. Number these points so found on the transparent paper 1 in., 2 in., 3 in., 4 in., 5 in., and 6 in.

The points 1 in., 2 in., 3 in. form a curve on the transparent paper. Similarly there will be another curve for the points 4 in., 5 in., 6 in. These two curves correspond with the top and lower dead centers of the "auxiliary" bank. The point K where these two lines intersect is the required point locating the auxiliary pin on the master rod.

## Germany Building Automotive Steam Power Plants Under Doble License

Those of our readers who experience in the automobile industry dates back to the war period will remember that a steam car known as the Doble was developed and produced in limited numbers in Detroit at the time. The car received an unusual amount of publicity but it was built only in small numbers and for a short period, the total production in Detroit having been limited to ten, according to one report.

Now comes word from Germany that two locomotive firms of that country, Borsig of Berlin and Henschel & Son of Kassel, have secured licenses under the Doble patents. The Henschel firm has built an experi-

mental passenger car equipped with a 120-hp. compound engine which is said to have shown a speed of 93 m.p.h. and a fuel consumption no greater than that of an equivalent car with internal combustion engine. A condenser is fitted, but not all of the exhaust steam is condensed, apparently, for it is stated that one supply of water will last for 250 miles.

The powerplant evidently is intended chiefly for trucks and buses and for railcars. Henschel has received orders for railcars equipped with the Doble powerplant from the National Railways and from one privately-owned German railroad.

## Public Pays \$108,600,000 for New Cars in First Two Months

PHILADELPHIA — Domestic dealer income from new car sales in the first two months of this year at list prices was \$4,500,000 more than in the same months last year, despite production delays which cut volume on many lines to a fraction of what it would have been had cars been available.

Total retail passenger car sales in January and February were valued at \$108,600,000, as compared with \$104,100,000 in 1933, *Automotive Industries* monthly estimate indicates. This represents an increase of 4.1 per cent, as com-

pared with a gain of 4.8 per cent in unit sales. Although this year's prices in general are higher, the average unit sales declined from \$700 in 1933 to \$695 this year.

The small gain over last year in the first two months, of course, was due to January's poor record, as the February totals show the effect of accelerated production in that month. February car sales in the United States were valued at \$65,100,000, a gain of \$16,300,000 over last year, or 34.4 per cent, as compared with a 36.7 per cent gain in units. As

the accompanying table shows, February gains in both units and dollars were caused entirely by an expansion in the demand for Chevrolet, Ford and Plymouth cars, and for cars in the \$751 to \$1,000 bracket, all other cars registering a loss.

Chrysler and Ford both increased their percentage of total unit and dollar volume in the domestic market during the first two months, while General Motors registered a loss.

Detailed estimates are provided in the following tables:

### U. S. New Car Registrations and Estimated Dollar Volume by Retail Price Classes February 1934 and 1933 Compared

	UNITS						ESTIMATED DOLLAR VOLUME					
	1934	1933	1934	1933	Per Cent of Total	Per Cent Change	1934	1933	1934	1933	Per Cent of Total	Per Cent Change
Chevrolet, Ford and Plymouth	70,345	44,689	74.2	64.4	+57.0		Chevrolet, Ford and Plymouth	\$42,000,000	\$25,300,000	64.6	51.8	+66.0
Others under \$750	8,782	11,985	9.3	17.3	-26.6		Others under \$750	6,200,000	7,800,000	9.5	16.0	-20.5
\$751-\$1,000	10,729	6,570	11.3	9.5	+63.3		\$751-\$1,000	8,800,000	5,700,000	13.5	11.7	+54.3
\$1,001-\$1,500	3,354	3,619	3.5	5.2	-7.4		\$1,001-\$1,500	4,000,000	4,300,000	6.1	8.8	-7.0
\$1,501-\$2,000	745	1,329	0.8	1.9	-43.9		\$1,501-\$2,000	1,300,000	2,300,000	2.0	4.7	-43.5
\$2,001-\$3,000	677	880	0.7	1.3	-23.0		\$2,001-\$3,000	1,900,000	2,200,000	2.9	4.5	-13.6
\$3,001 and over	232	293	0.2	0.4	-20.8		\$3,001 and over	900,000	1,200,000	1.4	2.5	-25.0
Total	94,864	69,365	100.0	100.0	+36.7		Total	\$65,100,000	\$48,800,000	100.0	100.0	+34.4
Miscellaneous	23	99										
Total	94,887	69,464										

### U. S. New Car Registrations and Estimated Dollar Volume by Retail Price Classes Two Months 1934 and 1933 Compared

	UNITS						ESTIMATED DOLLAR VOLUME					
	1934	1933	1934	1933	Per Cent of Total	Per Cent Change	1934	1933	1934	1933	Per Cent of Total	Per Cent Change
Chevrolet, Ford and Plymouth	113,075	99,376	72.4	66.6	+13.6		Chevrolet, Ford and Plymouth	\$67,500,000	\$56,200,000	62.1	54.0	+20.0
Others under \$750	14,892	24,037	9.5	16.1	-37.9		Others under \$750	10,400,000	15,600,000	9.6	15.0	-33.4
\$751-\$1,000	18,074	12,321	11.6	8.3	+46.6		\$751-\$1,000	14,800,000	10,700,000	13.6	10.3	+38.3
\$1,001-\$1,500	6,817	7,891	4.4	5.4	-13.5		\$1,001-\$1,500	8,100,000	9,300,000	7.5	8.9	-13.0
\$1,501-\$2,000	1,542	2,820	1.0	1.9	-45.3		\$1,501-\$2,000	2,700,000	4,900,000	2.5	4.7	-44.9
\$2,001-\$3,000	1,209	1,836	0.8	1.2	-34.2		\$2,001-\$3,000	3,300,000	4,600,000	3.0	4.4	-28.2
\$3,001 and over	450	708	0.3	0.5	-36.4		\$3,001 and over	1,800,000	2,800,000	1.7	2.7	-35.7
Total	156,059	148,989	100.0	100.0	+4.8		Total	\$108,600,000	\$104,100,000	100.0	100.0	+4.1
Miscellaneous	70	296										
Total	156,129	149,285										

### U. S. New Car Registrations and Estimated Dollar Volume by Manufacturing Groups Two Months 1934 and 1933 Compared

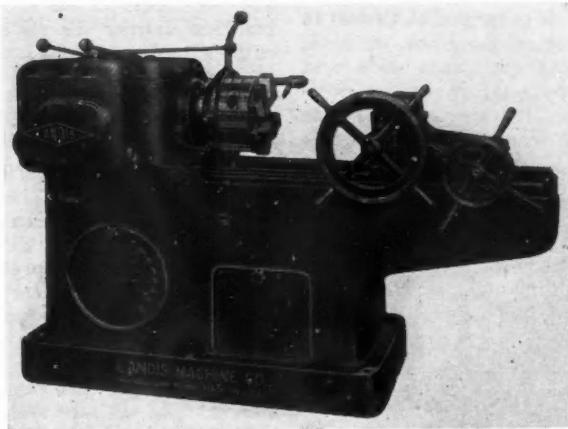
	Percentage of Total Units		Percentage of Total Estimated Dollar Volume	
	1934	1933	1934	1933
Chrysler Corp.	24.2	21.3	23.7	20.0
Ford and Lincoln	35.2	16.1	30.4	14.8
General Motors	30.4	51.0	32.6	51.2
All Others	10.2	11.6	13.3	14.0
Total	100.0	100.0	100.0	100.0

# NEW DEVELOPMENTS

## Automotive Parts, Accessories and Production Tools

### Threading Machine In Larger Sizes

Landis Machine Company, Inc., Waynesboro, Pa., is now offering the Landmaco threading machine in the 2-in. and 2½-in. sizes. This machine was formerly built only in the 1-in. and 1½-in. sizes.



The new machines have capacities from  $\frac{1}{2}$  in. to 2 in., and  $\frac{1}{2}$  in. to 2½ in. respectively, both in single-head and double-head models. Both sizes and models can be equipped with leadscrew attachments.

The 2-in. and 2½-in. Landmaco threading machines are patterned closely after the smaller machines and have the same features of design, including the geared headstock with chrome nickel steel gears, spiral bevel gear spindle drive, anti-friction shaft and spindle bearings, built-in reversible coolant pump, friction clutch control,

double wall bed, covered guides, and other features.

The machines are rigid in construction and have a wide speed range. All controls are centralized and within easy reach of the operator.

### New Line of New Departure Bearings

A line of ball bearings which simplify chassis design and assembly operations has been announced by the New Departure Manufacturing Co., Bristol, Conn. They include a front-wheel bearing, a rear-wheel bearing, a pinion bearing and a differential bearing. In addition to simplifying design and assembly, these bearings are claimed to reduce the need for axle adjustments and service attention.

For the front wheels there are two angular-contact bearings, which are designed for positive sealing. Separators hold the grease in each bearing. No adjustment for wear is required, and the bearings are lubricated for the life of the car.

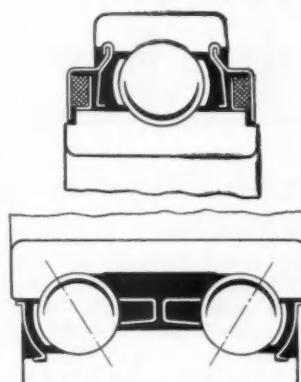
The rear-wheel bearing, of which a sectional view is reproduced herewith,

has a seal on each side, of such design as to retain its sealing efficiency permanently, according to the claims of the manufacturer. It is self-lubricated with special grease, with which it is filled at the factory, and it is claimed that no dirt can get in and no lubricant can get out and interfere with proper operation of the brakes.

The pinion bearing, which is also illustrated, is of the double-row type. It is provided with permanent, close-fitting shields and comes filled with a special lubricant. The two rows of balls are spaced a considerable distance apart and have angular contact. To assure their permanent rigidity, these bearings are pre-loaded. Since only a single bearing is required for mounting the pinion, installation is exceptionally simple.

For installation on the hubs of differential gears, a bearing is offered which is claimed to combine the impor-

tant features of both single-row angular-contact and radial bearings. High shoulders on the non-thrust side of the rings resist deflecting forces and increase the rigidity of the differential.



The contact angle used corresponds to the ratio of thrust load to radial load due to the bevel gears.

The bearings described in the foregoing have their first application in the 1934 Oldsmobile Six.

### Air Cleaner and Intake Silencer

The new Burgess combined air cleaner and intake silencer, recently announced by the Acoustic Division of the Burgess Battery Company, Madison, Wis., is based for its silencing action on the same principle as the Burgess exhaust muffler. The air cleaner represents a new development, using cellulose fiber saturated with oil.



Burgess combination air cleaner and silencer

The fibers hold a certain volume of oil, which is said to feed out by reason of the capillary action of the dust and dirt as it accumulates, thus maintaining cleaning efficiency. The designs are worked out in cooperation with automotive and carburetor engineers.

# NEW DEVELOPMENTS

## Automotive Parts, Accessories and Production Tools

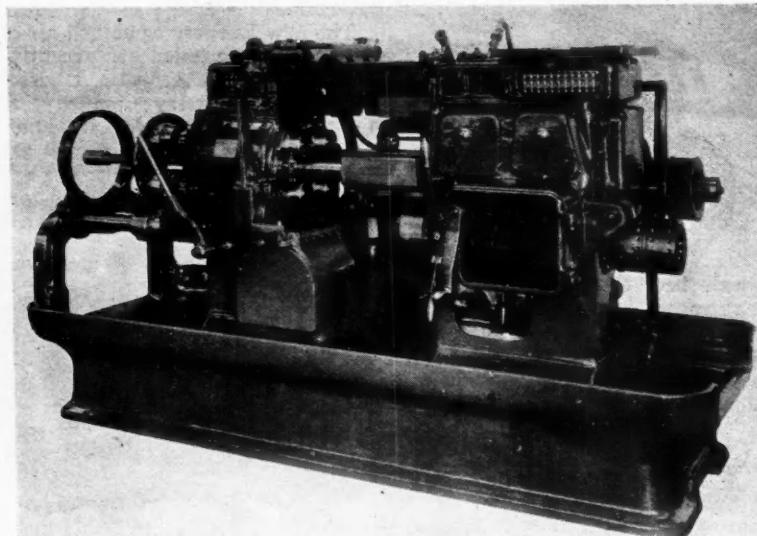
### New Line of Automatic Screw Machines

A year and a half ago the National Acme Company, Cleveland, Ohio, announced a new four-spindle automatic screw machine, called the  $\frac{7}{8}$ -in. Model R machine. Since that time a large number of these machines have been installed and a complete line of machines, embodying the same characteristics of construction and design, has been built. These Model R four-spindle machines range in capacity from  $\frac{7}{8}$  in. to  $2\frac{1}{4}$  in., and supplement the Model GA four-spindle automatic, which is built in the sizes from  $2\frac{1}{8}$  in. to  $3\frac{1}{2}$  in., inclusive.

materially idle time for machine repair.

The three-point bearing of the spindle carrier design gives an exceptionally rigid support to this vital part of the machine. The two wide bearings of the carrier itself are supported in the spindle carrier housing. The spindle carrier stem, which is integral with the carrier and guides the main tool slide, is supported by an end bearing in the frame of the machine.

The Model R is arranged to thread in the second or third positions, or both, in all sizes, and the same slide and operating mechanism, in either position, can be used for accelerated reaming or turning operations. The slide



To afford production speeds that will tax modern cutting metals to the utmost, very high spindle speeds are provided. Spindles are equipped with anti-friction bearings throughout.

High productive capacity of the Model R is due in part to the rapid and smooth "indexing" of the spindle carrier. A modified Geneva mechanism starts the movement from standstill, indexes the spindle carrier rapidly and accurately into place and brings it to a dead stop before the hardened locking pin slips into place. The roller on the indexing arm engages hardened steel blocks on a gear which is constantly in mesh with a ring gear on the spindle carrier. This new indexing mechanism reduces wear on the spindle carrier parts, thus reducing

in each position is operated by a separate cam, thus giving a selective feed in either position.

To employ both forming tools and drills at the correct relative surface speeds for each tool, high-speed drilling attachments can be used in all four positions—driven directly from the center gear mounted on the end of the spindle carrier stem. Only one drive is required from the gear box to this center gear.

An improved disappearing stock stop makes possible the use of standard tooling in the fourth position and this, for many jobs, is the equivalent of an additional work spindle.

The cam drums, although mounted and guarded so that chips cannot clog this operation, are readily accessible,

so that the operator can change cams with no loss of time. Heavy barrel-type cams have been eliminated. Steel cams are used, wide-faced and strong, but easy for the operator to handle. This means that the operator will change to cams suitable for the job and thus increase production.

To ensure the constant lubrication of all moving parts without attention from the operator, so as to avoid breakdowns, the lubrication of all bearings and working parts of the machine is taken care of by a pump located in the top section over the gear box. This pump forces oil to the visible oilers and from these a separate copper tube runs to each bearing.

Cutting oil is supplied by a separate direct-connected pump of large capacity which pumps the oil from the reservoir in the pan to an auxiliary reservoir cored out in the top brace or tie piece on top of the machine. Flexible steel tubes connected to this auxiliary oil reservoir on each side of the machine deliver the oil directly to the cutting tools.

### Skinner Oil Reclaimer

A line of oil purifiers with capacities ranging from 3 gals. in 24 hours up, and entirely automatic in operation, has been brought out by Skinner Motors, Inc., of Detroit. A pressure filtering process is used in these purifiers and is claimed to remove even the finest particles of suspended matter in the oil.

The operating cost runs from around 2 cents per gallon reclaimed on the larger units, to 4 cents on the smallest size, based on current cost of 5 cents per kWh.

It is claimed that the filtering element, which consists of a large number of parchment-like discs, assembled on a spindle under a pressure of around 70 lb., will filter out all material down to  $1/250,000$  in. The principle is what is known as "edge filtration," the oil passing between the compressed discs rather than through the material.

The oil can be either forced through the reclaimer under pressure or drawn through by vacuum on the receiving end. By operating a reversing valve in the connections, the direction of the pressure is reversed, which affords a simple method of cleaning the filtering element by the "backwash" system.

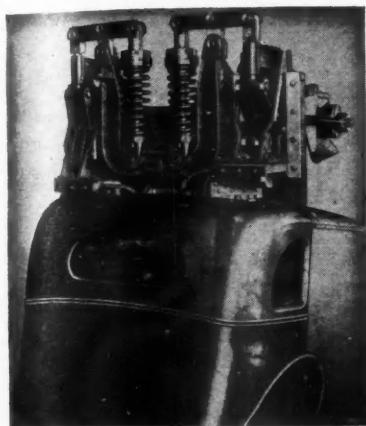
A thermostatically controlled lamp is incorporated in the unit to maintain the correct temperature automatically.

### Two-Head Welding Press

The illustration shows an interesting application of a new two-head, double-stroke projection welding press made by the Thomson-Gibb Electric Welding Co., Lynn, Mass. Two gusset plates are being welded to the top rail and back panel, 16 projection welds being made with each stroke, which means

32 welds for each revolution of the crank.

The press handles this job rapidly and produces a smooth, strong weld. The cost of welding is said to be re-

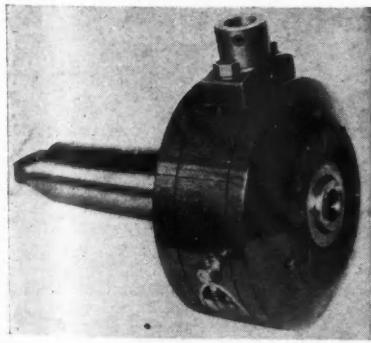


duced to less than one-half that of the former method.

Built like a high-grade, heavy-duty machine tool, this welding press has a smooth, powerful toggle action and is equipped with quick changing dies, faced with Elkonite inserts and water-cooled.

### Speeder Unit For Standard Machines

Ex-Cell-O Aircraft & Tool Corp., Detroit, Mich., announces a special drill-speeder unit with a special high-speed range for horizontal boring and milling machines, radial drills and similar machines. The head driver is furnished with a No. 5 Morse Taper, while the drill spindle is fitted with a No. 3 Morse Taper to accommodate drills up to  $1\frac{1}{16}$  in. in diameter.



The ratio of the drill speeder is 4 to 1 over the spindle speed of the machine on which the unit is used. The maximum speed at which the machine spindle should be operated is 700 r.p.m., which gives a maximum drill speed of 2800 r.p.m.

The unit is provided with a boss on the outside diameter of the head in which a bar is inserted to engage with a suitable bar mounted on any stationary part of the machine.

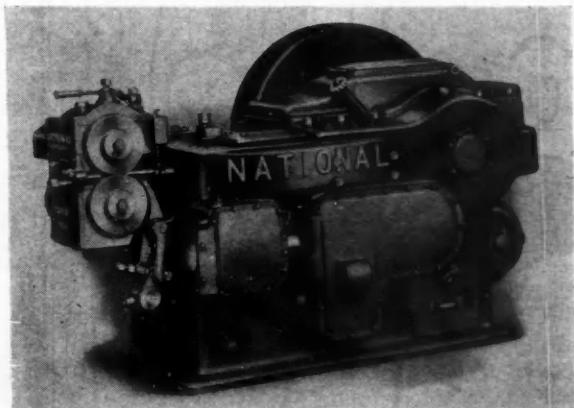
## NEW DEVELOPMENTS

### Automotive Parts, Accessories and Production Tools

#### A New Line of Cold Headers

The National Machinery Company, Tiffin, Ohio, announces a new line of single and double-stroke, both solid and open die, cold headers in all sizes to 1-in. capacity. The bed frames are cast steel, box type, with the working parts running in oil and with all bearings, with the exception of the main shaft, running on roller bearings.

ry-over mechanism holds the blank rigidly, but it is held open at the time of feeding and does not snap off of the blank on its return movement, so that there is no scraping of the wire. An entirely new principle is employed on the double-blow machines for transferring the position of the coning and heading tools, the tools being shifted from one position to the other by an oscillating bolster. Independent ad-



The machines have short, compact bed frames and employ the National type over-arm heading slide, which provides bearings for the slide, both at the front and rear of the crankshaft, and enables the distance from the shaft to the front of the machine to be materially shortened.

Wire is fed to the machine at an angle to provide a squarer end on the blank, and a new type of cut-off and carry-over is employed. The car-

justments are provided for both the coning and heading tools, and every facility has been provided for quickly changing or adjusting the dies or tools.

Safety devices are provided at the necessary points throughout the machine, but these are automatic and no shearing blocks or plates are used. Quick adjustments are provided for the wire feed and stock gage, all of the controls being conveniently arranged to simplify the handling of the machine.

#### Felt Bonded Metal

Felt Bonded Metal, offered jointly by H. H. Robertson Co., Pittsburgh, Pa., and The Felters Co., Boston, Mass., is covered by patent which produces a permanent bond between felt and metal. In the process, a metal coating is fused between the felt and metal so that the fibres of the felt are embedded in the metal coating in a bond which will not separate under heat, cold, moisture, fumes, or mechanical friction.

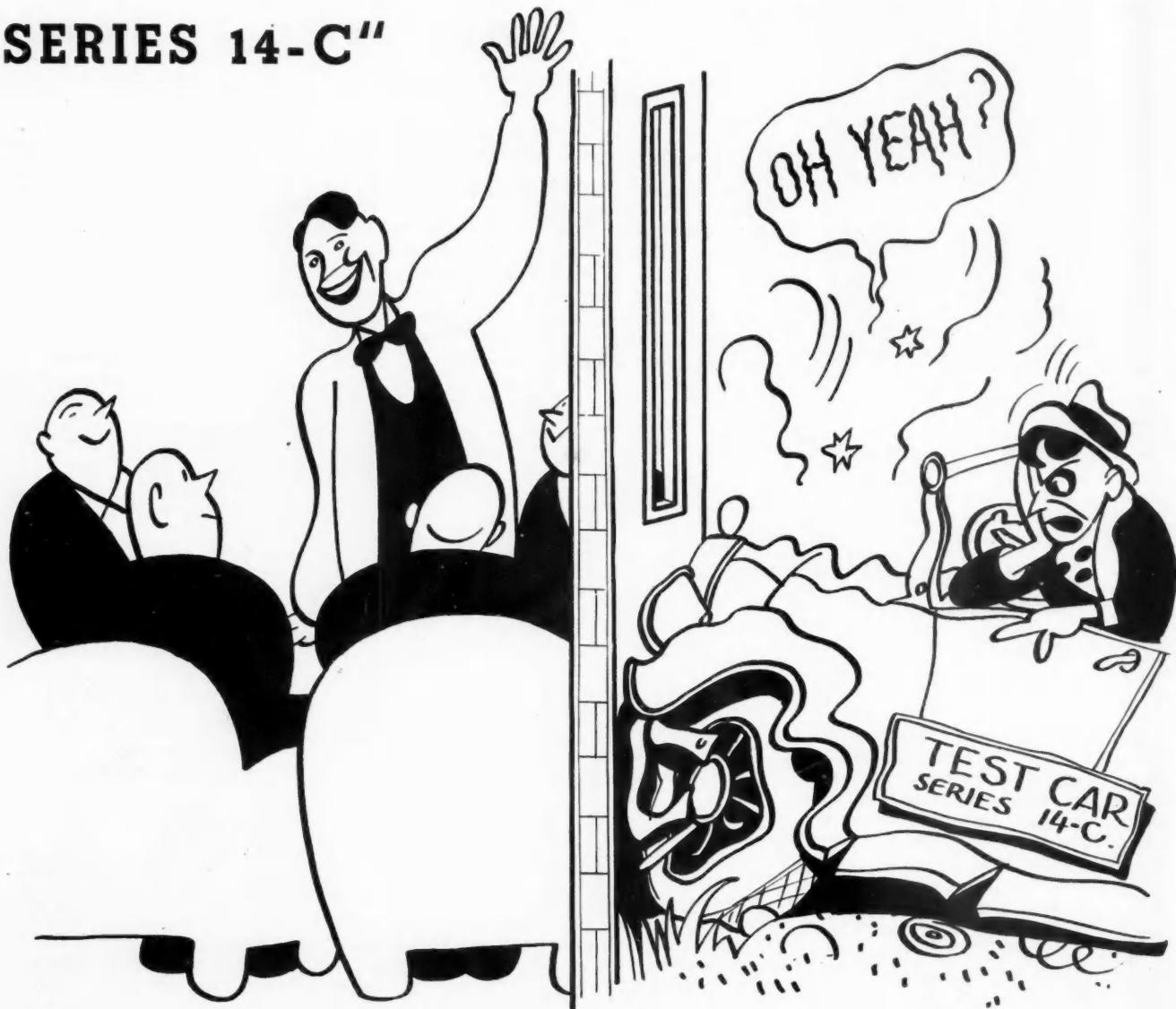
The application of felt may be to one or both sides of the metal. The

thickness of the felt may be varied to suit requirements, as can also the weight of the sheet metal. After the felt is applied, the metal can be bent or shaped without breaking the felt contact.

The uses of this material appear to be almost unlimited; as, for example: the felt lining provides sound-deadening and also felt to metal contact at joints. Experimental work is now being done on this material in connection with the building of automobile bodies and airplane fuselage.

Felt Bonded Metal may be finished with Bakelite, lacquer, or in plywood.

# "LABORATORY TESTS SHOW WE'VE FOUND THE PERFECT BRAKE LINING FOR SERIES 14-C"



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No tests are ever considered complete by Rusco Engineers until checked in terms of practical operating conditions. The fact that millions of feet of Rusco linings are sold annually for replacement purposes gives them a first-hand knowledge of all types of requirements. Whether it is a matter of meeting your speci-

fications or working out complete brake lining recommendations, Rusco engineers can provide a product that—on the basis of actual road tests—will fit the job. Also specifications can be met with woven, woven-molded, flexible molded, or full-molded materials.

Complete performance data on Rusco Linings for the brakes of your car will be furnished gladly upon request. The Russell Manufacturing Company, Middletown, Conn. Detroit office, General Motors Building. Chicago office, 1901 Indiana Ave. Cleveland office, 201 Western Reserve Bldg., Superior Ave. and W. 9th St. Canadian Factory, St. Johns, P. Q.

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